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China Report

AGRICULTURE



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1 May 1984

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IMPACT OF POPULATION ON AGRICULTURE STUDIED

Beijing RENKOU YANJIU [POPULATION RESEARCH] in Chinese No 6, 29 Nov 83 pp 29-31

[Article by Gu Yikang [7357 4135 1660] of the Zhejiang Provincial Agricultural Office: "Our Nation's Rural Population Problem from the Agricultural Ecological and Economic Perspective"]

[Text] Population and the economy are very closely related. Marxism has historically held that the economy is the foundation upon which the population exists and develops, that different socio-economic conditions determine the different population patterns and that "the production forms of material life restrict the entire course of social life, political life and spiritual life." (See "The Collected Works of Marx and Engels," vol 2, p 28.) At the same time that Marxism emphasizes the determinative role the economy plays in population development, it does not in the slightest degree overlook the tremendous influence that the population has on the economy and that population development has on economic development. The population is the main body of social life, being both the consumer and producer of material goods. Without a population of specific parameters, it is not possible to form specific social productive forces. But if a person wants to become a truly productive force, he must combine with a specific means of production, for otherwise he is only a potential productive force. At a specific stage of economic development, a productive form of specific scope can only accommodate a specific labor force and supply a specific volume of production. Because of this, the development and present state of the population cannot fail to have a tremendous influence on the development of the social economy and on the entire society itself, being able to spur on or slow down the rate of socio-economic development.

For more than 30 years now, our nation's excessively rapid population growth has caused numerous difficulties for socialist construction and has put tremendous pressure on agriculture. Add to this our errors in agricultural guiding ideology and in economic policies and measures, and it has created real imbalances in the agricultural ecology. This article attempts, from the agricultural ecological and economic perspective, to use the state of our nation's agricultural development to explain the relationship between the rural population and the development of agricultural production.

(1) Correctly understand the position and role of man in the agricultural ecological system.

Agricultural production is the most basic productive activity upon which mankind depends for its survival. From the viewpoint of agricultural economics, we can view it as the network formed by the combination of the system of living organisms and the environmental system as acted on by mankind's productive activities--the agricultural ecological system. In the agricultural ecological system, mankind holds a unique position. On the one hand, as natural man is considered a consumer, mankind is the highest-level consumer in the ecological system, and on the other hand, as social man, mankind is the master of the ecological system.

In the circulation of material and energy within the ecological system, the living organisms drop sharply as one progresses upward from one nutritional level to another, the number of organisms at a higher level being equal to one-tenth the number at the level below, forming a so-called "pyramid" (called the living organism pyramid or the food chain pyramid). Mankind as the highest-level consumer in the ecological system occupies the tip of the food chain pyramid, and mankind's consumption level is far higher than that of ordinary animals. If mankind's consumption needs exceed the actual production volume that the ecological system can supply, then imbalances result. Because of this, in order constantly to maintain the balance and stability of the system is accord with the "one-tenth law," mankind as a consumer in the ecological system must see to it that the number of people and the production volume that the agricultural ecological system can supply correspond. If the population grows blindly, exceeding specific limits, then it places excessive loads on the cyclical functioning of the agricultural ecological system, leading to damage to the ecological balance. In the same sense, the supply and demand balance formed between man and the ecology is the highest norm by which to explore the ecological balance. Mankind must control its own reproduction, seeing to it that it corresponds to the actual productive capability of the agricultural ecological system.

At the same time, man as a social being occupies the position of master of the ecological system and is a contradictory entity that is both consumer and producer and is in this way distinguished from all other animals. We firmly believe that mankind has an unlimited ability to remake nature. But at the same time we must admit that in specified historical periods, the ability of mankind to remake nature is limited. If we divorce ourselves from the limits of specific periods and speak of limitlessness, it easily leads to violating nature's laws. Man's subjective dynamic role cannot transcend nature. From this we can see that the notion of "population theory," which holds that man is a pure consumer like other animals, writing off man's social nature and productive capability, is one-sided and mistaken. Conversely, "manpower theory," which ignores the fact that man is the highest-level consumer in the ecological system and one-sidedly emphasizes man as producer, is also mistaken.

(2) Blind growth of the rural population is an objective reason behind our nation's agricultural ecological imbalances.

In recent years, the agricultural ecological-balance problem has come more and more to the attention of people. People have continually warned of the worsening of the ecological environment. One point of view holds that the cause of our nation's agricultural ecological imbalance is the production composition of an agriculture which takes grain to be primary and of policies and measures which violate the principle of suiting local conditions. I feel that this view sees only the symptoms of the problem, while the root cause is that the population has not been strictly controlled, resulting in an imbalance between the demands on the population and society on the one hand and the volume of production that the agricultural ecological system can supply on the other.

Our nation's agricultural ecological system has reached its present state through gradual development and evolution over a long historical period under specific geographical and natural environmental conditions. For thousands of years, our nation's agriculture has expanded into and opened up new land on a large scale in keeping with population increases, starting at the earliest point in the Yellow River valley, moving into the Changjiang River and Zhujiang River deltas and later opening up the Sanjiang plains in Dongbei. Partially following this course of development and movement, our nation's natural ecological environment suffered continual damage. For example, there was soil erosion, worsening weather patterns and a reduction in soil fertility, which adversely impacted on the natural foundation of agricultural production.

After liberation, our nation's agricultural productive forces were liberated, but because we were unable to handle correctly the relationship between population growth and the development of production and to control the population promptly, and because we overemphasized "manpower theory," population development changed from the high birth rate, high death rate and low growth before liberation to a high birth rate, low death rate and high growth. In this way, the population after liberation grew at an unprecedented rate. Production developments were canceled out in large part by the growth in population. Our nation's rural population exploded from more than 400 million at the start of liberation to 800 million. The huge increase in the agricultural population greatly diluted the ability of agriculture to supply commercial goods and agricultural products and to expand reproduction, leaving our nation's agricultural products in a continual state of short supply. The government must first work to solve the problem of clothing and feeding 1 billion people. The reality we now face is: less than one-tenth of the world's cultivated land must support approximately one-quarter of the world population. This is an extraordinary accomplishment. But at the same time, it makes clear the magnitude of the load borne by our nation's agricultural ecological system. Through effort over more than 30 years, the output of our nation's major agricultural products stands at the forefront of world output, but on a per-capital basis not only do we fall short of the agriculturally developed nations, but we fall short of overall world levels. The increase in the population leads to increased demand for grain and other

agricultural products, and this requires that even more land be cultivated for agricultural production; but an increased population and national construction development also cause a tremendous increase in the use of land for urban, non-agricultural purposes. These two uses form a sharp contradiction, forming a trend toward more people and less land. Compared with 1952, 1978 had seen a net reduction of 130 million mu of cultivated land, and cultivated land per capital throughout the nation fell from 2 mu at the start of liberation to 1.5 mu. At the same time there was a large increase in the use of agricultural machinery and fertilizer, the cultivation burden on each laborer nonetheless fell from 9.2 mu in 1952 to 5.1 mu in 1977. Over a relatively long period, rural agricultural development was arrested by "leftist" agricultural policies. These conditions have led to a greater and greater surplus of agricultural labor. The tremendous surplus of agricultural labor becomes a pure consumer in the agricultural ecological system. The facts prove that if we lose control of the population increase, then the balance between social production and need is inevitably upset, leaving agricultural production overburdened for long periods of time. This is a major reason why our nation's agricultural production has developed slowly for a long time and why we have seen agricultural ecological imbalances. We have violated natural laws and economic laws in our agricultural production principles and policies, seriously upsetting the proportionate balances between agricultural sectors and aggravating the imbalances in the agricultural ecology.

The situation noted above makes it clear that strictly controlling population growth is the basic path to restoring our nation's agricultural ecological balance.

The Party Central Committee places great stress on carrying out birth control and controlling population growth. In his 12th Party Congress report, Comrade Hu Yaobang [5170 5069 6721] clearly pointed out that "carrying out birth control is a fundamental policy of our nation. In terms of the current situation, controlling the growth of the rural population is especially pressing and a particularly arduous task. This is because 800 million of our nation's population of 1 billion reside in rural areas. Agricultural development restricts the rate of development of the national economy. Large increases in the agricultural population weakens agriculture, the support for our national economic foundation, making it difficult for agriculture to shift from self-sufficient production to large-scale commercial product production and causing a large portion of the benefits generated by stimulating the economy to be eaten up by new population increases.

At present, the natural growth rate of the rural population is much higher than that of urban areas, and therefore the task of controlling rural population growth is more arduous. In addition, rural cultural levels, living standards and social welfare and insurance services lag behind those in urban areas, which also increases the difficulty of birth control work. Because rural economic development levels are low, except for a few localities, we have still been unable to solve the problem of the care and support of peasants in their old age. This is the peasants' greatest concern. Rural areas that have fairly widely implemented family contract systems of production

responsibility present new problems for birth control work. Under this situation, first we must realistically strengthen party and government leadership of birth control work and must widely publicize and educate people so that every persons and household is aware that practicing birth control is a fundamental national policy; second, we must make birth control targets and essential element of economic contracting, with established bonuses and penalties which are implemented as prescribed. On the foundation of economic development, we must rapidly develop rural social security and insurance services, solving in a planned and step-by-step manner the problem of support for peasants in their old age. Carrying out these measures will effectively reduce the birth rate of the rural population.

(3) Fully utilize existing rural labor, hastening an overall upsurge in the agricultural economy.

To solve the contradiction between social needs and production requires on the one hand controlling population growth and on the other hand forcefully raising agricultural production levels, opening up new areas of production, supplying even more employment opportunities and producing even more agricultural products. Rationally combining our vast human resources and our nation's many abundant natural resources will improve our agricultural productive forces. In our economic structure, we must have overall development of agriculture, forestry, animal husbandry, sideline production and fishing and carry out the comprehensive management of agriculture, industry and commercial enterprises. Only in this way can we maintain a healthy agricultural ecological cycle. The comprehensive development of agriculture, forestry, animal husbandry, sideline production and fishing will see to it that agricultural production is no longer confined to 1.5 billion mu of cultivated land and that all of our vast national territory becomes the object of greater agricultural use, carrying out an regionalization and specialization of production that suits local areas and establishing a new ecological balance in which man and the biosphere are in harmony, with higher productive forces from moisture stored in forests and fertilizer gathered from livestock. But this is not enough and is not as good as accommodating the entire rural labor force. We must turn rural areas into complete societies of comprehensively managed agriculture, industry and commerce by moving toward linking what must come before and after the actual agricultural effort with the agriculture itself. We must further emancipate our minds, relax our policies, open wide new avenues and allow peasants, under the premise of performing well in agricultural production, to utilize excess labor and various sources of financing and every opportunity offered by society to do whatever they are capable of doing. Permitting and encouraging peasants to move about between provinces and prefectures will be beneficial both in terms of technical exchange and in terms of correcting the uneven distribution of population and finances among localities. We must also strengthen rural and small-town construction, allowing peasants in these small-scale economic and cultural centers to engage in commerce, construction, social services.... If tens of thousands of flourishing small town appear throughout the nation, it will offer the peasants nearly 100 million employment opportunities. Only in this way can we really manage to depart from the land, but not from the countryside. In addition, at the same

time that we control population growth, we must increase investment in rural intellectual capabilities, working hard to improve the quality of the population and seeing to it that both the number and quality of the agricultural labor forces keep pace with the development of agricultural productive forces.

In short, only by working hard in the two areas of controlling population growth on the one hand and developing agricultural production and expanding employment on the other, and by seeing achievements in these areas, can we maintain an excellent ecological environment and a healthy cycle in the agricultural ecology.

9705

CS0: 4007/83

SYMPOSIUM ON DOUBLING AGRICULTURAL OUTPUT

Beijing JINGJI RIBAO in Chinese 19 Jan 84 p 1

[Text] Li Ruishan [2621 3843 1472], vice minister of the State Economic Commission, at the National Symposium on Doubling Agricultural Output which convened at Shijiazhuang pointed out: In the past 4 or 5 years, some 8 prefectures and municipalities (leagues) and 112 counties (banners) have doubled agricultural output. The actual practice of these prefectures and counties which have doubled agricultural output provides valuable experience for realizing the magnificent goal put forth by the 12th Party Congress. He asked all areas to study their experience conscientiously and also proposed seven suggestions for continuing to push the rural economy forward.

In discussing the basic reasons for the major experience of doubling agricultural output, Li Ruishan pointed out that a central thread runs through the series of general and specific policies that have been formulated since the 3d Plenum of the 11th Party Central Committee. That is, all of them start from actual conditions and are practical and realistic. Establishing and firmly maintaining this Marxist ideological line are the basic reason for the dramatic accomplishments achieved by agriculture in these past few years. He feels that the prefectures that have doubled agricultural output have several major areas of experience that are worth using as a reference by all areas. One is the reform of agricultural management systems and management methods, implementing and constantly perfecting the family responsibility system that ties payment to output. A second is to adjust agricultural distribution and its structure so that methods fit the local conditions and to take control of the gaps that can promote the entire situation in accordance with the principle of suiting methods to local conditions and take advantage of superior qualities to rectify the arbitrary and impractical directions of the past that solely stressed grain methods and production. A third is to give full play to the role of former agricultural measures, constantly improve the conditions of agricultural production and energetically develop various kinds of socialized rural economic and technological tasks. And a fourth is to strengthen and improve party leadership, raise revolutionary spirit and transform ideological workstyles.

Li Ruishan suggested seven ideas:

1. We must formulate agricultural development plans. Through summing up the work of the past few years and setting down a plan on how to go forward at an

early stage, we should carry out the great economic program set forth by the 12th Party Congress all the way down to the grass roots and on a planned foundation, suit measures to local conditions and go a new route that has local characteristics.

2. Open up production routes and actively develop a diversified economy. We must adhere to the guiding principle of "not relaxing grain production while actively developing a diversified economy," go the route of comprehensive development, let agricultural production advance deeply and broadly and change the situation whereby "800 million peasants grow rice to eat."

3. Carry out the spirit of the party Central Committee's Document No 1 concerning the possibility of extending the period that land is contracted for up to 15 years and even a little beyond that, encouraging peasants to invest in contracted land according to the principle of "first, eat and second, construct" and guiding the people to accumulate funds to use in expanding reproduction.

4. Further raise the level of scientific farming. Agricultural development relies, first, on policy and, second, on science. The key to realizing agricultural modernization is to rely on science to build China's agricultural production on a scientific foundation while at the same time relying on policy development. We must energetically train agricultural technical talent and spread and extend the scientific achievements that we already have as quickly as possible.

5. We must properly treat the peasants of our time. First of all, we must properly treat the peasants of specialized and key households and households that have enriched themselves first. We must protect them, support them and solve the various problems in their moving ahead, sum up their experiences and make full use of their role in laboring to enrich themselves and in rural readjustment.

6. We must further solve the problems in the circulation of rural commercial products. We must consider in an overall manner how rural circulation can meet the needs of commercial production. And in accordance with the demands of comrade Wan Li, the secretary of the county party committee must be not just the agriculture secretary or just the grain secretary but must learn to guide all economic work and have a comprehensive economic knowledge and the ability to guide the large-scale development of commercial production.

7. Strengthen the party's ideological and political work in the countryside and guide the masses in constructing a new socialist countryside.

12452

CSO: 4007/74

EXISTING PROBLEM OF ACUTE SHORTAGE OF MEANS OF TRANSPORTATION, COMMUNICATIONS

Beijing BAN YUE TAN [SEMIMONTHLY TALKS] in Chinese No 23, 10 Dec 83 pp 3-6

[Article by journal's Office of Economic Editors: "China's 1983 National Economic Situation"]

[Text] In 1983, all localities and departments implemented and carried out in earnest the party Central Committee's lines, principles and policies and strive with the enhancement of economic results as a center for further readjustment in the proportions of the national economy, for a positive restructuring of the economic systems, for a setting in motion of a full-fledged consolidation of enterprises and for a vigorous upgrading of the quality of enterprises, thereby propelling an all-round development of the national economy. Gratifying achievements were attained on the various fronts of agriculture, industry, commerce, finance and trade. The developing situation of the national economy as a whole was good.

Agriculture Achieves Bumper Harvests Again

Agriculture triumphed over serious natural calamities and achieved bumper harvests again. This year, as a result of unfavorable weather, waterlogging in the south and drought in the north, the disaster areas were far more extensive than in the preceding 2 years. Because of the popularization and perfection of a system of linking production to family contracts, the enthusiasm of China's hundreds of millions of peasants was brought into full play, the forces resisting calamities and striving for bumper harvests were strengthened and good harvests were achieved in a year of serious calamities. Throughout the nation, the output of summer grain crops rose more than 10 percent over last year, a good harvest of autumn grain crops was also achieved and grain output for the whole year was expected to be 3 percent higher than last year, with cotton output increasing over 5 percent and sugar output soaring remarkably, all achieving new records in history. Also increasing at a rate faster than last year's was the production of pork, beef, mutton, eggs. A slight decrease, caused by planned limitation on production and reduction of sown areas, was registered only in the output of oil-bearing crops, flue-cured tobacco, jute and bluish dogbane.

A big margin in growth was also attained in forestry, animal husbandry, sideline production and fishery, with the proportion of the output value of

the industrial sideline production rising steadily in the gross output value of agriculture. Particularly noticeable was the growth of specialized households and priority households in the rural areas. Whereas in the past there were only bits and pieces, today specialized households and priority households have sprung up in large numbers. By the end of this year, the number of specialized households throughout the country was expected to reach 5 million, an increase of more than 1.6 million households over last year. The percentage of marketable products of the specialized households generally reached 70 to 80 percent, several times higher than that of the ordinary peasant households, thereby tremendously increasing the percentage of marketable agricultural and sideline products. This year, on the basis of last year's growth at a faster tempo, some originally poor and backward areas were generally ahead of the advanced areas in agricultural production growth.

In the wake of the development of agricultural production came heartening achievements in the building of rural commerce, service trades, culture and education and other basic installations. As compared with last year, the income of peasants would be increased by approximately 10 percent. The whole rural areas were radiant with smiles and rejoicings. Joyfully the peasants said: "It is now a time of good leadership, good policies, good situations, and good prospects."

Industrial Production Maintains Sustained Growth

Guided by an ideology centering on upgrading economic results, the industrial production of this year in the various localities was focused generally on unity of speed and results, with the main direction of attack pinpointed at an improvement of quality of products, increase in variety of colors and designs, reduction of costs, reduction of energy consumption and reduction of consumption of raw and processed materials, with all securing a firm grip on the work of increasing the profits of the enterprises making profits and of reducing the losses of the bit enterprises incurring losses, thereby propelling production growth and heightening economic results. This year, the gross industrial output value increased at a tempo that quickened with each passing quarter. It was up 10.5 percent from January to October, with light industry increasing 8.1 percent and heavy industry growing 12.9 percent, as compared with the same period of last year. Totally surpassing the original plans was the production of coal, crude oil, generated energy, steel products and cement. Also increasing by a big margin was the output of sugar, beer, dacron cotton blend cloth and home appliances. Economic results also took a turn for the better, with the budgetary state-operated industrial enterprises achieving a growth of 8.6 percent in output value, 7.5 percent in revenues, from sales and 6 percent in realized profits and taxes in the January-September period.

The distinctive features of the situation of this year's industrial production were as follows: (1) Light industry grew from a slow pace to a gradually accelerated tempo. In the 1st quarter of the year, light industry had a growth rate of only 2.5 percent without even reaching the requirements of annual plans, still lagging far behind heavy industry in growth rate.

Beginning in the 2d quarter, as a result of adjusting the production plan of chemical fibre cloth and of increasing tremendously the production of television sets, washing machines, refrigerators, name-brand bicycles and sewing machines, which were marketable products meeting consumer needs, light industry gradually picked up in speed and achieved a growth rate of 7.5 percent in the January-September period, approaching in August and September a synchronous growth with heavy industry of the corresponding period. (2) Increased production resulting in decreased revenues was transformed into increased production bringing about increased revenues. In the 1st half of this year, the industrial enterprises generally faced a situation of increased production resulting in decreased revenues, and the realized profits of the state-operated industrial enterprises within budgetary plans dropped by 0.6 percent, as compared with the same period of last year. In the days following July, after the spirit of a circular set forth by the State Council and the Central Discipline Inspection Commission of the CPC Central Committee had been carried out in earnest in all localities, and after the two unhealthy trend and evil practice of indiscriminately jacking up prices and recklessly laying down apportionments had been held in check, the production costs of enterprises came down and their realized profits went up. In the 3d quarter, the realized profits of the budgetary state-operated enterprises were up 4.7 percent over the same period last year. From January to September, the realized profits and taxes of the industries in 15 provinces and autonomous regions of the whole country had a growth rate either surpassing or approaching the growth rate of their gross output value. This was a gratifying phenomenon seldom seen in many years. (3) The speed of reducing losses and increasing profits of industrial enterprises was accelerated step by step. Losses were reduced by 1.9 percent in the 1st quarter, 29.8 percent in the 2d quarter and 45.1 percent in the 3d quarter, as compared with the corresponding quarters of last year. From January to September, losses were reduced by a total of 23.6 percent, with 13 provinces and municipalities and autonomous regions slashing losses by 30 to 57 percent, as compared with the same period of last month. The situation was better than in previous years.

Urban and Rural Markets Thrive in Prosperity and Stability

Along with the development of industrial and agricultural production, the urban and rural markets continued to maintain an excellent momentum in liveliness, prosperity and stability. As compared with the same period of last year, the total volume of retail sales of social commodities registered an increase of 10.5 percent in the January-October period of this year, and there was also an increase over last year in the total volume of procurement of farm produce and sideline products and in the volume of growth of industrial products purchased by the state-operated and cooperative commerce. The market commodities which had been in short supply--television sets, tape recorders, washing machines, cameras, refrigerators, dacron cotton blend cloth, woolen goods, knitting wool, name-brand bicycles and sewing machines--not only increased in volume of supply but also achieved a new upgrading and a new change in quality and in variety of colors and designs. In the agricultural means of production, an improvement was also achieved in the situation of the production and supply of high-quality chemical

fertilizers, small tractors, irrigation facilities, processing machines and tools as well as gasoline and diesel oil for farm produce and sideline products.

The current problem is that the supply of many commodities remains incapable of satisfying the needs of a changing market. In foods such as fish and lean pork, in clothing such as dacron knitwear, woolen cloth and woolen goods and in durable consumer goods such as color television sets, name-brand bicycles and sewing machines, market needs are far from being satisfied, and it remains necessary to strive for an increase in production.

Total imports and exports in foreign trade registered an increase over the same period of last year, and continued surpluses were maintained. The state financial revenues increased quarter after quarter, and the situation was relatively good.

Inflated Magnitude of Capital Construction Placed under Preliminary Control

The tendency of inflating the magnitude of investments in capital construction was placed under preliminary control, the composition of investments was improved and the priority construction projects were stepped up. Beginning in the 3d quarter of this year, the various localities, proceeding from the spirit of a State Council directive, made a full-fledged checkup on projects under construction, reduced investments in non-budgetary capital construction, increased the proportion of investments in budgetary construction projects, cut down projects of a general nature and stepped up construction of priority projects, thereby correcting the problem of runaway control over investments in projects not listed in capital construction plans, a problem which had cropped up since the 2d half of last year. From January to September, the proportion of budgetary investment in total investment rose from 47.6 percent to 50.1 percent and that of budgetary investment in energy and communication and transportation surged from 29.7 percent to 38.1 percent as compared with the same period of last year, with the proportion of investment in 70 priority projects constituting 18.7 percent of the total investment and with plans for the whole year completed by 67.4 percent, which was higher than the level of consummated annual plans of the nation's total investment. This explained the fact that relatively good results were achieved in our concentration of funds for ensuring completion of such priority construction as energy and communication.

While reviewing the achievements made in the national economy of this year, we must also see a number of noteworthy problems in economic development. There are two salient problems: One problem is that the national economy develops at a relatively fast tempo, but the economic results are not too desirable. With the exception of agricultural production which has achieved better economic results, industry and commerce and foreign trade remain relatively low in economic results. For example, the obsolete products already put out of existence in some countries are still being manufactured, and the light and textile industries are still producing some products which are not marketable and not meeting consumer needs. The other problem is

that the magnitude of capital construction is still overinflated, that the nonproductive construction projects and the processing industries of a general nature are still given too much investment and that the growth of heavy industry is excessively stimulated, thus creating a very serious contradiction between supply and demand in energy and communication, causing a particularly acute shortage of the means of communication and transportation. This state of affairs has gravely restricted the healthy growth of the national economy. From theory to practice, from thinking to action, we must definitely make a firm determination to put the upgrading of economic results in first place in economic work, to stick firmly to the principle of unifying speed with economic results, to overcome completely the thinking that values speed and belittles economic results, to control rigidly the magnitude of investment in capital construction, to organize rigidly the production of heavy industry in compliance with state plans, to place expenditures and outlays under rigid control, to correct thoroughly indiscriminate payments of bonuses and to make a sudden and violent attack on the unhealthy money-spending tendency, so that the national economy may continue to forge ahead in healthy growth.

12315

CSO: 4006/243

CONVENTIONAL TECHNIQUES IN STATE FARMING

Beijing JINGJI RIBAO in Chinese 25 Jan 84 p 1

[Text] In accordance with the demands to double total output value by the end of the century, by 2000 the total output value for agriculture and industry in the state farm system must rise from 1980's 10 billion yuan to 40 billion yuan. In order to complete this difficult task, in addition to continuing to perfect the production responsibility system, actively initiating family farms, furthering the development of agriculture, industry and commerce and invigorating circulation channels, state farm departments must put forth a great deal of effort in each field in striving to expand the application of scientific and technological achievements. First, rely on policy and, second, rely on science. Only then will production forces be able to pick up speed and develop.

In recent years state farm departments have already popularized the application of nearly 1,000 scientific and technological achievements. They have accomplished a great deal, but they still have not been as strict or urgent as others were in taking charge of policy and the responsibility system, making up losses and creating profits and readjustments in agriculture, industry and commerce. Some comrades still have an inadequate understanding of this, their measures are not energetic and a lot of effective foreign and domestic technology has not been popularized and applied in a timely fashion. And some regular technological measures have not even been strictly and conscientiously carried out. Local agriculture has already come to the forefront in the application of many scientific and technological achievements. Presently China's agriculture is in the midst of being transformed from traditional agriculture to modern agriculture and from a self-sufficient and semi-self-sufficient economy to a commercial economy. Science and technology are becoming more and more important. The state farm economy now faces a severe challenge. Only through the widespread application of advanced technology will it be able to expand production, increase yields, raise quality, lower costs and strengthen competitive ability.

Right now we should stress getting a good handle on the popularization and application of conventional technology. Conventional technology is a product of combining science and technology with production practice. It is effective and, moreover, is easily grasped by the masses. According to estimates, the conscientious spread and application of conventional technological measures could raise the yield per unit for major crops by over 30 percent within a fairly short period. This cannot be taken lightly. We must improve production conditions

by fitting measures to the local situation, raise the ability to resist disasters, cultivate green manure, nourish soil fertility, constantly improve and renew varieties, strengthen plant protection work and disease and insect damage prevention work and raise the level of mechanized operations. The broad spread and application of these types of conventional technologies can also gradually raise people's understanding and scientific level and thus lay a solid foundation for the application of new technology.

12452

CSO: 4007/74

STATE FARM SCIENCE AND TECHNOLOGY EXPERIENCE DISCUSSED

Beijing JINGJI RIBAO in Chinese 25 Jan 84 p 1

[Text] In recent years, the national state farm system has studied and expanded upon close to 1,000 scientific and technological achievements. Of these, 186 have received national or ministerial-level awards, and some achievements have matched advanced world standards. The spread of these scientific and technological achievements has played a major role in promoting the total economic development of the state farms.

Branch Farm No 5 of Heilongjiang's Youyi State Farm is a modernized and comprehensive experimental base for northern arid-region grain agriculture first begun in 1980. After it adopted advanced technological measures such as technical equipment, implemented rational crop rotation, measured soil quality before applying fertilizer and comprehensively prevented and treated disease and insect damage, they strengthened and disaster resistance ability and the yield per unit for grain, and legumes rose from 286.5 jin to 335.9 jin, or 156.9 percent of the average yield per unit for the entire Youyi State Farm. The total profit for 4 years of management was 6.08 million yuan, or 415.2 percent of the profit of the previous 4 years. The agricultural machines that they introduced have been accepted and used, and many new techniques and skills are already being used in designing and creating a new generation of Chinese agricultural machines and tools, and they have played a role in promoting the renewal of agricultural machines.

The state farm seed cultivation system is just now being built and strengthened, and it has already selected, raised and popularized a number of high-quality varieties of agricultural crops. And some have received national and ministerial awards for discoveries or improvements. At present, in addition to state farm use, about 150 million jin of high-quality seeds of the major state farm crops are also supplied to neighboring villages each year. Chemical herbicides are used on about one-third of the total cultivated area of the state farms to control weeds. Some 880,000 mu with plastic sheet mulching have already been planted in cotton, which is 24.6 percent of the area sown in cotton in the state farm system, and can yield 30-50 jin more per mu than the regular method of growing cotton. Plastic sheet mulching cultivation can also be used with fruits and melons, vegetables, peanuts and other crops, where the increased yields are also very apparent.

In rubber cultivation, since we have extended the use of high-yield, high-quality varieties introduced from abroad, we have basically realized seed improvements in the rubber plantations established since 1960, and the yield per mu has risen from 30 kg in the 1950's to 80-100 kg. China's scientific and technological efforts in rubber production already occupy a leading world position in areas such as the establishment of rubber plantations, early-yield estimation, polyploid breeding and tissue culture, etc.

State farms have selected and popularized a number of excellent varieties of animals and birds, and over a long period of selective breeding, they have produced the "Chinese black-and-white patterned dairy cattle" which is suited to our natural environment. Average annual milk production for dairy cattle at both the Peking and Shanghai state farms is over 12,000 jin, reaching advanced world standards.

From 14 to 24 January, the Ministry of Agriculture, Animal Husbandry and Fishery held a National State Farm Science and Technology Work Conference to sum up and exchange the scientific and technological work experience of the state farm system. It recommended to the entire state farm system that it emphasize 55 items/measures for spreading science and technology.

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CHARACTERISTICS OF 1984 FARM MACHINERY MARKET

Beijing JINGJI RIBAO in Chinese 29 Dec 83 p 3

[Text] Materials provided by the Agricultural Machine Industry Bureau of the Ministry of Machine-building Industry say: At the recently convened 1984 National Farm Machinery Product Order Meeting the total amount of the transactions concluded for agricultural machines reached 1.31 billion yuan, an increase of 176 percent and 47 percent over the amounts for 1981 and 1982, respectively, and clearly reflected the upsurge in the activity of peasants who are raising their own funds for purchasing agricultural machines. At present, the special features of agricultural machine demand are:

1. The demand for small-scale tractors has continued to rise. At this year's product order meeting, some 650,000 small-scale tractors were ordered, or 110.1 percent of the number for the same period last year. On these, orders for small four-wheel [tractors] grew nearly three times and those for hand-tractors grew 58.5 percent. At the same time, the number of rubber-wheeled wheelbarrows fell 14.6 percent over the same period last year. This shows that the peasants who are becoming rich are just now emphasizing the raising of labor productivity and the improvement of working conditions.
2. The demand for processing machines for agricultural and sideline occupations and for machines for economic diversification continues to grow on a broad scale. Up to the present, the total orders for various agricultural and sideline product processing machines, compared to last year, are as follows: rice mills, up nearly two times, and both flour mills and oil presses up 60 percent. This indicates that both specialized and key households which stress diversification are developing rapidly.
3. There is a conspicuous contradiction between production and demand for high-quality brand-name products. The supply of Jiangsu's model 195 diesel engine is not even one-tenth the amount demanded, the Dongfeng 12-model hand tractor of Changzhou only satisfies 30 percent of the demand and the small, four-wheel tractor of Shandong's Weifang can only satisfy 17 percent of the demand. The demand for Shanghai-produced underwater electric pumps and deep-well pumps, the Beijing-produced model 125 flour mill, Tianjin's rice mill, etc. all greatly surpass the supply of goods.

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FARM MACHINERY PRODUCT PURCHASES

Shenyang SHICHANG ZHOUBAO in Chinese 17 Jan 84 p 2

[Text] On 22 October of last year, the National Farm Machinery Product Order Meeting concluded at Weifang, Shandong. Orders were taken on 12 types of farm machinery products including large and mid-sized and small tractors, tractor-pulled agricultural implements and accessories, harvesters, motorized plant-protection equipment, small-tractor farm tools, agricultural and sideline-occupation processing equipment, trailers, rubber-tired wheelbarrows, internal combustion engines, agricultural pumps and machine fittings. The situation at the conclusion of transactions of the conference was:

1. The number of transactions increased. Transactions concluded at the meeting amounted to 1.32 billion yuan, 48.5 percent greater than the 889 million yuan of the previous year's Changsha purchase meetings. The total national amount of orders for agricultural machinery products has already reached 6.77 billion yuan, which is 54.2 percent greater than for the same period last year.

2. There has been a great increase in the supply of small tractors, but the supply still does not meet the demand. The supply of accessory implements is sufficient, surpassing the demand. The 1984 National Preliminary Plan offered 604,350 small tractors, a 25.9 percent increase over 1983. The 109,564 supplied at the meeting, added to the 542,022 contracted for before the meeting, amounts to 89.7 percent of the amount in the plan. Of this, 259,500 are small, four-wheel tractors, a 59.9 percent increase over 1983, and those already contracted for make up 86.5 percent of the production plan. The plan called for 344,850 hand tractors and a 8.6 percent increase over 1983, and those already contracted for make up 92.1 percent of the planned production. At the meeting, orders were placed for 203,124 of the model 195 diesel engine. Added to the 928,152 ordered before the meeting, the total surpasses the planned production by 28,152. A pressing situation has emerged for diesel engines.

In 1984, 363,620 small tractors can be supplied, 103,565 more than in 1983. Total orders for 227,038 are 62.4 percent of the amount that can be supplied and are equivalent to the actual sales level for last year. In 1984, the total number of orders for agricultural pumps is 698,047, and there are still some 170,247 awaiting to be ordered. Aiming at the gap in the supply of some small-scale agricultural machines, the state is implementing a planned distribution of some agricultural machine products to promote a balance with the product demand.

3. There has been no obvious pickup in large- and mid-sized tractors, but things look good for concluding transactions for high-quality goods. For 1984, the state set a preliminary output of 47,660 for large- and mid-sized tractors, a 14.3 percent increase over 1983. The total order of 24,017 is only 50.4 percent of the planned number. Of these, the 6,582 50 hp tractors already ordered from the Shanghai plant already make up 80.3 percent of the planned production.

4. There is a gap between supply and demand for accessories. In 1984 there is a planned supply of agricultural accessories worth 1.8 billion yuan. Total orders come to 1.65 billion yuan, or 91.7 percent of the supply. Of these, maintenance parts come to 710 million yuan or 43.2 percent, and complete sets of accessories come to 940 million yuan or 56.8 percent.

This major meeting shows that both the production and marketing of agricultural machine products are doing very well and that the situation is very good. Yet we must also pay attention to the following: 1) At present, small-scale agricultural machines are right now in a golden age. On the one hand, we must strive to raise output and quality and produce products that are attractive yet inexpensive. On the other hand, we must pay attention to the fact that market demand trends by no means go up all at once. 2) The purchase of large-scale tractors shows no sign of recovering, and so in production we should strictly maintain the principle of sales setting production. 3) We must pay attention to the production of agricultural accessories and avoid the tendency to "stress the primary machine" and take accessories lightly or to "stress complete sets" and take maintenance lightly.

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EDIBLE-OIL MANAGEMENT DISCUSSED

Beijing JINGJI RIBAO in Chinese 21 Jan 84 p 2

[Text] The Ministry of Commerce reports: Last year, again, there was an unprecedented harvest in edible oil, and at present the storing of fall grain is in its final stages. According to statistics for the end of December 1983, stored grain is up 45 billion jin over the same period last year, and estimates are that the highest grain reserves will be up 42.3 percent over the same period last year. Considering the special features of the present sharp increase in reserves, inadequate storage capacity, a lot of outdoor storage and peasant households storing grain for the state and the added fact that in some areas there is a great deal of grain with a high moisture content, in some areas the grain temperature is on the high side, creating the potential for hidden damage from heat generation, toxic changes and insect damage.

In order to conscientiously protect the grain the ministry put out this special notice:

1. Strengthen leadership in edible-oil protection work. All levels of edible-oil departments must regularly report to the local government and party leaders in a timely fashion in order to gain their support. They definitely must place edible-oil protection work as an important item on the agenda for the primary leaders' personal attention and must also designate someone to be in charge of the work. They must conscientiously strengthen political and ideological work for protection personnel and heighten their sense of responsibility toward protecting the edible-oil. We definitely must seek out those responsible for losses from spoiled grain due to dereliction of duty and deal with them severely.
2. We must seriously deal with unsafe edible-oil and, after the fall grain has been put in storage, immediately organize a major, one-time grain storage safety survey, surveying both state storage grain and the grain stored by peasant households for the state. We must conscientiously check up on grain with a high moisture content and a high temperature and with insects and other unsafe factors. When a problem is discovered, we must separately adopt effective measures for prevention and treatment according to the concrete situation and related regulations. Survey results and the situation for handling it must be reported in a timely fashion.
3. We must seriously and conscientiously protect the grain system. After edible-oil storage has been switched to normal protection procedures, we must

strictly implement systems of investigating the grain situation, sanitation and hygiene and safety. We must join in implementing the spirit of the "Notice on Starting a Movement to Eliminate Rats This Winter and Next Spring" promulgated by the Central Patriotic Public Health Campaign Committee in November 1983 and get a good handle on rat elimination work.

4. Mobilize the masses and actively do a good job in outdoor storage work. As long as they fully and rationally use storage capacity, they should actively study and create outdoor storage methods that can both protect the grain well and reduce expenses. We should strengthen the examination of grain left outside, strictly strengthen covering work and guard against leaking rain, moisture condensation, heat generation, insect growth and damage from rats and sparrows.

5. Strengthen the management of peasants who store grain for the state. Because storage by peasants is not as good as storage by the state, both in facilities and in experience, we must strengthen leadership in this particular work. We must make grain stored by peasants for the state a task of state storage management. In addition to the need to set contracts for storage for the state, we must also demarcate set places and designate experienced protection personnel and, according to the system, visit the people at set times to investigate, record, give an account and discover and handle problems in a timely fashion, just as for state-stored grain. And, moreover, we should take responsibility for passing on technical knowledge about grain protection to the peasant households who store for the state in order to ensure the safety of the grain stored for the state. We must pay attention to summarizing experience, the lessons learned and the methods that worked well and also request immediate notification of the ministry.

6. Do safety and security work. At present, we are in the midst of struggling against criminal offenses, and we must defend against enemy destruction. In addition, there are everywhere many outdoor grain storage bins, and much of the material used is easily flammable. Last winter some places had very little rain or snow, and during the spring, there will be even more windy days. Consequently, we must give a great deal of emphasis to fire prevention work. We must conscientiously implement the fire prevention guiding principle of "making fire prevention primary and fire fighting supplementary" and ensure that it is a reality in our ideology, our organizations and in our facilities and in our responsibilities. Regardless of whether they are leading cadres or the numerous staff and workers, all must concretely divide the work, clarify responsibility and strictly guard against the occurrence of any mishaps.

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ON SELECTIVE CONSTRUCTION OF WATER CONSERVATION PROJECTS

Beijing ZHONGGUO SHUILI [WATER CONSERVATION IN CHINA] in Chinese No 6,
Nov 83 pp 35-36

[Article by Sun Fushi [1327 6534 0013]: "On Selective Construction of Water Conservancy Projects"]

[Text] Water conservation work touches on all aspects of the national economy. Given the complexity of natural conditions throughout the country, the tasks of water conservation work are especially formidable. Because the financial and material resources of the state are limited at present, determination of strategic goals in water conservation work and selection of the best key construction projects are extremely important for giving full play to the greatest economic benefits.

In summary, increasing the flood prevention capability, providing water conservation guarantees for solving the water shortages in key urban industries in the north and attaining an annual grain production level of 960 billion jin are the three major aspects of water conservation work. In selecting actual engineering projects, we must begin with the overall situation and real conditions.

Among the seven major rivers in China, the Huanghe and Changjiang suffer most from disastrous flooding. Although the natural conditions of the Huanghe and Changjiang are quite different, they have several similarities in flood prevention measures. Dike repair is urgently needed. The dikes of the Huanghe and Changjiang are products of history. The dike bases leak, and hidden dangers in the dikes often determine safety or disaster. At the same time, increasing the height of the dike body of 1 meter in the Henan section of the Huanghe and the Shangjing section of the Changjiang can increase the discharge by an additional 10,000 cubic meters per second, which has obvious benefits. The silt backs and faces on the Huanghe and the (blown-fill pool embankments) of the Changjiang are effective measures for reinforcement of the eikes, and much success has already been obtained. On the Huanghe, a silt embankment 300 meters wide and a height roughly even with the discharge water level with an estimated length of the dikes on each bank at 1,250 km would require 2 billion cubic meters of earth. In the future, the dikes can be heightened along with the silt level in the river bed, until it becomes an underground river in relative

terms. The large dike in the Jingjiang section of the Changjiang is estimated at 30 km of blown fill and 145 km of constructed terrace ranging in width from 30 to 50 meters. An estimated 50 million cubic meters of earth with an additional 30 million cubic meters in the broad top added to the body of the dike could reach the standard water level of 45 meters at Shashi City, Hubei. The average height of the dike could decrease from 12 meters to 7-9 meters, with an excess height of 2 meters. There must be good planning and design for these two projects, and they should be managed in accordance with capital construction procedures.

The Hetao Irrigation District has an irrigated area of 6.3 million mu and can be expanded to 10 million mu. There is 6 mu of irrigated land per capita. This irrigation district has the largest irrigated area and highest per-capita amount of irrigated land in north China. Average per-capita grain production in the 1950's was 1,600 jin, and per-capita sales were 800 jin. Total output has risen repeatedly over the past 20 years and more. The main problems are: 3-4 million cubic meters of water are drawn each year, but the canal system is incomplete and the primary and secondary canals have not been given masonry linings. Leakage exceeds 1 million cubic meters. The irrigation water moves slowly and drainage is blocked. Saline-alkaline land now occupies more than 50 percent of the irrigation district.

In the Huanghe Diversion Irrigation District in Henan and Shandong Provinces in the lower reaches of the Huanghe, the actual irrigated area combined with the drought protection and silt irrigation areas totals about 20 million mu and draws about 9 billion cubic meters of water annually. The problem here is similar to that in the Hetao Irrigation District. The completed area of the irrigation district occupies about 12.8 percent of the control area in Henan Province and 5.8 percent of the control area in Shandong Province. The utilization coefficient of water in the canal system is about 0.3. Saline-alkaline land now covers about two-thirds of the area of the irrigation district. In addition, about 200 million tons of silt collects in the canals each year, which requires a large amount of cleaning.

There are serious water shortages in the Huanghe basin. Increased water utilization rates and water conservation are extremely important in these two irrigation districts.

The low-lying dike region in the middle and lower reaches of the Changjiang contains about 70-80 million mu of cultivated land (including the Lixiahe Agricultural District of northern Jiangsu province). Because the dike region in the past generally had much land and a sparse population and required little labor for cultivation, it has long been a major commodity grain base area in the country, despite the planting of only one crop of upland rice with per-mu yields of 200-300 jin, and was an important source of revenue for the ruling classes through history. After liberation, there were major developments in drainage and irrigation facilities and improvements in cropping systems. Single cropping became double cropping

or even triple cropping, and yields in the lower reaches around Taihu Lake in southern Jiangsu average 1,500 jin per mu, with some fields as high as a ton of grain per mu. Huaiyin Prefecture in northern Jiangsu, which had suffered so many disasters in the past, has finally moved up, with a total output exceeding that in Suzhou Prefecture. Yields have now generally reached 1,000 jin per mu throughout the dike region in the middle and lower reaches of the Changjiang. Thus, despite the population increase, it is still an important base area. A distinguishing feature of the dike region is a guaranteed water supply. Under conditions of sufficient motive power, rational farmland engineering and irrigation and drainage capabilities, the level of underground water can fall, and with irrigation and drainage done according to the requirements of the crop growth process, water conservation guarantees can be provided for high yields of rice and wheat, something that is unattainable in most gravity-fed irrigation districts. There are no major differences in natural conditions throughout the dike region in the middle and lower reaches. In combination with other cropping conditions, it is quite possible that the entire district can achieve average yields of 1,500 jin per mu.

There are serious industrial and agricultural water shortages in northern China. Completion of the first stage of the engineering plan for the eastern line to transfer water from south to north requires coordinated completion of related construction projects in an irrigation district of over 20 million mu to make it possible to gain benefits from the project as soon as possible. At the same time, there must be good preparations for second-stage projects. This mainly involves planning and design projects for drawing water over the Huanghe and construction of a water reclamation and regulation reservoir for a drainage and irrigation canal system covering 20 million mu as well as measures for leakage prevention in the canals and reservoir.

The current prosperity in agriculture depends mainly on policies. In the long run, however, there must be certain material conditions, and water conservation is a necessary guarantee. For this reason, key water conservation projects should receive the same emphasis as energy and communications. Backbone items like primary and secondary canals in key water conservation projects should receive assistance from the state and be included in state planning. The three aspects of construction, production and management in the channel system under the secondary canal can be contracted to the masses as responsibility land. It is estimated that completion of all items in the project described above could create the conditions for a 60 million-jin increase in grain production, all of which would be commodity grain.

Given the state's current financial resources, it will not be easy to complete the above tasks by the end of this century.

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SUGGESTIONS MADE ON IRRIGATION CONTROL

Beijing ZHONGGUO SHUILI [WATER CONSERVATION IN CHINA] in Chinese No 6,
Nov 83 pp 46-48

[Article by Jia Bangjie [6328 6721 2638]: "Some Proposals for Reform of
Irrigation Management Work"]

[Text] Reform is the bridge to the creation of a new situation. Are reforms in irrigation management work necessary? Like any other type of work, there must be continual improvements and reforms in irrigation management work. There must be comprehensive reform to achieve comprehensive improvement.

As for where to begin, I propose the following points from the perspective of water resource utilization:

I. In the formulation of pricing policies for water and electricity fees, I feel that consideration should be given to the following principles:

1. They favor motivation of the initiative of the masses who benefit to conserve water and thereby promote the application of advanced irrigation methods and techniques.
2. They benefit the promotion of the rational exploitation and utilization of many types of water resources.
3. They favor expanding the scope of benefits and guaranteeing stable high yields in the areas that benefit.

When formulating standards for collecting water and electricity fees, consideration naturally must be given to the ability of the masses to pay and not to exceed the limits of their ability to pay. From the perspective of current water resource utilization, however, it can be seen that the main problem in the standards for collecting water and electricity fees is not that they exceed the ability of the masses to pay but instead that the standards for collection are too low. This brings on a lot of difficult problems for irrigation management work. These are shown mainly in that:

1. The phenomenon of exceeding water use quotas is fairly common. It is difficult to extend advanced irrigation methods such as irrigation of small-bordered plots (mainly short plots) and short canals, and irrigation efficiency is low.
2. There are fairly serious problems of inadequate work for timely harrowing, cultivating, intertilling and protecting soil moisture in loose soil. Water is being substituted for management, and there are too many applications of water.
3. There is dependence on canals while wells are ignored. Exploitation and utilization involves overusing surface water while neglecting underground water, which has led to a widespread rise in the water table.
4. There are major losses in canals during water transport, and there have been no improvements in the utilization coefficient of irrigation water for a long time.

In recent years, due to the correct lines, principles and policies of the Central Committee and the universal establishment of agricultural production responsibility systems centered on the contract responsibility system in agriculture, certain aspects of the above problems like inadequate soil moisture preservation work after irrigation and the problem of substituting water for management have been overcome. The above problems in irrigation management, however, have not been fundamentally resolved. The long-term failure to solve these problems is related to the fact that the standards for collecting water and electricity fees are too low.

What should actually be considered in formulating the standards for collecting water and electricity fees? I feel that the spirit of Premier Zhao Ziyang's talk at the end of March this year during his visit to Shaanxi should serve as the primary foundation. Premier Zhao emphasized that "water conservation and discussion of economic benefits are the keys which determine whether water conservation construction will be able to take a healthy path. We must... collect the necessary water fees from the peasants. This can favor a change in the bad practice of 'taking water from the big common pot' and in overcoming the wasteful phenomenon of slow irrigation with large amounts of water. It can also promote technical progress and improve economic results." (See SHAANXI RIBAO 5 Apr 93 p 1.) Based on this spirit, I propose that when considering the formulation of standards for collecting water and electricity fees, they should in principle be calculated according to the value of commodity water. The advantages of this method are:

1. It benefits the state as well as the development of water conservation. The state invests a great deal of capital in constructing an irrigation district. Low fee collection standards after the benefits appear can create a burden for the state. The more irrigation districts that are constructed, the greater the burden. This does not benefit water conservation development. Calculation according to the value of commodity water will not constitute a long-term burden on the state that cannot be eliminated.

2. It benefits accounting and the improvement of management levels in administrative departments. If fee collection standards are too low, administrative units will depend on subsidies for a long period. A unit which bears a deficit that cannot be overcome will not motivate the initiative of the employees in administrative units. Calculation according to the value of commodity water provides a self-sufficient foundation for administrative units and can strengthen the confidence of administrative units and employees for the improvement of administrative levels.

3. It favors improved production benefits from irrigation. Low fee collection standards do not promote accounting by the masses in regions which receive the benefits. When they are calculated according to the value of commodity water, the masses in the regions which benefit must do the accounting. This can lead to improved production benefits from irrigation--it creates the most valuable wealth from a unit of water.

4. It benefits the motivation of the masses in the regions which benefit to improve irrigation methods and increases their enthusiasm toward irrigation technology. This promotes the scientific utilization of water and water conservation.

5. It promotes better exploitation and utilization of all types of water resources.

Some places have proposed that fee collection standards should be no greater than 5 percent of the total value of agricultural production. I feel that this proposal is unscientific because:

1. There are substantial differences in the amount and value of farm products in any irrigation district over time (in different years) and over space (in different locations), but there is an overall trend of increase.

2. Although there is basically a proportional distribution of crops in an irrigation district, it is not completely unchanging.

3. The formulation and implementation of water and electricity fee collection standards cannot be changed from year to year. There have been two changes in water fee collection standards in the Luohui Canal irrigation District in 30 years (they were formulated in the early 1950's, revised once in the mid-1960's and once again in the early 1980's). Water and electricity fee collection standards have been revised once in 20 years in the Dongfanghong [East Is Red] Electric Irrigation District, while there have been enormous changes in the agricultural production situation in the irrigation district.

4. An identical standard of 5 percent of the agricultural product is obviously irrational for the formulation of fee collection standards in new irrigation districts (such as the Eastern Guanzhong high-elevation water-lifting project or the high-cost Yellow River Diversion Irrigation Project) and in old irrigation districts (such as the Luohui and the Jinghui Irrigation Districts, which are low-cost, high-yield gravity flow irrigation districts).

CPC Central Committee Document Number 1 issued in 1982, "Summary of the National Rural Work Conference," called for "redefinition of the fee collection system for industrial and agricultural water usage in urban and rural areas." How should they be redefined? According to the spirit of Premier Zhao's talk, there should be appropriate increases in the current fees that are too low, and enterprise management should be used to attain a valuation according to commodity water. In new irrigation districts or districts that for other reasons cannot now achieve this requirements, there can be temporary non-collection of part or all of the fixed-asset depreciation, major repair funds, taxes and so on, or the state can provide subsidies for any necessary policy-related deficits, to permit a transitional period of 10 or 15 years, for example. The units which receive benefits in irrigation districts can make appropriate readjustments in the distribution of crops according to the cost of water during a transitional period to increase the production benefits of water (increased value of production). Irrigation management units should also strengthen economic accounting, improve irrigation methods and techniques and decrease the cost of water. To encourage the utilization of other water resources, any necessary supplementary clauses can be formulated in fee collection policies to permit a range of variation in fee collection standards under certain conditions. For example, when urgent measures must be taken due to a rise in the water table, fee collection standards for surface water can be increased, appropriate preferential treatment can be given to well irrigation and so on.

II. The question of the production efficiency of irrigation water. The Central Committee has pointed out: "The basic starting point should be improvement of economic results." There is no doubt that this policy is correct. The question is how to understand the policy correctly. In terms of irrigation management work, there are two possible understandings: one is to interpret "improvement of economic results" as increased income in one's own administrative unit and to understand the task of irrigation management work as being simply limited to "selling water": "I don't care if you drink eight bowls just as long as I sell more water; whether you increase output is your problem." The other understanding is to make improvement of social and economic benefits the basic starting point and to take notice of the amount of wealth that irrigation water creates for society as a whole. I feel that the first way of understanding is superficial. I propose that the key stage in which the water supply plays the greatest role in increased crop output should be taken as the standard of measurement. We must strive to force down the amount of irrigation in high-elevation lifting projects or large mechanical pumping districts like Eastern Guanzhong or the Yellow River Diversion. Moreover, we should stress the supply of water at key stages when it can play the greatest role in increasing crop production.

According to our observations, up to a certain limit, the productive efficiency of a unit volume of irrigation water is such that there is a direct relationship between a unit volume of irrigation water and crop output, i.e., the greater the amount of irrigation water, the greater the increase in output. After this limit is exceeded, however, a change

can occur in the relationship between a unit volume of irrigation water and crop output, i.e., increased irrigation can lead to declining output increases. The approximate law derived through experiments is shown in the following figures: during years of normal precipitation, one irrigation during the entire growth period of wheat using 60 cubic meters of water per mu increases output by 100 jin; two irrigations at 110 cubic meters per mu increase output by 170 jin; three irrigations at 150 cubic meters increase output by 200 jin; four irrigations at 190 cubic meters increase output by 210 jin; five irrigations of 230 cubic meters increase output by 200 jin; six irrigations of 260 cubic meters increase output by 190 jin and so on.

This law shows that the production efficiency is highest in per-unit volume of irrigation water when there is a one-time irrigation using 60 cubic meters, and economic results would naturally be at their highest. Although there is an absolute increase in output over one-time irrigation when irrigation is done two, three or four times, the relationship between the increased cost of irrigation and the value of the benefits of increased production must be taken into account. Those cases in which benefits exceed costs can be selected, while those in which costs exceed benefits cannot. There is no doubt that cases must not be selected when there is excessive irrigation and declining output increases.

The questions involved here require further research and resolution on how to integrate the calculation of total social and economic benefits with the relationships among the responsibilities, rights and interests of administrative units.

III. On the question of the unified management of water resources.

The water resources referred to here include:

1. The water resources of a river basin or river system, primarily sources of surface water.
2. The atmospheric, surface and underground water resources of an irrigation district.
3. The control of a ravine, including stored water, afforestation, the "four fields" and so on.

There is a clear reason for the necessity of unified management of water resources. Resources belong to society as a whole. To make rational use of water resources, there must be comprehensive action to overcome selfish departmentalism and to make overall arrangements.

The main problem at present is that there is too little unity in the area of exploitation and utilization of water resources.

1. In terms of a river basin, adhering to the principle of using high-level water in high places and low-level water in low places, so that the low lying water from River A is supplied to an already established irrigation district on River B, can permit the use of water from River B for gravity irrigation in an area at a higher elevation. This conserves energy and is a good thing. However, because it brings on problems related to the cost of water in the original irrigation district on River B, this good thing is hard to achieve.

2. In a single river system, the construction of a large-scale water-drawing irrigation district downstream for irrigating a million mu of land can meet the need for water resources in normal times with major shortages in water sources during droughts. However, when an even larger irrigation district is constructed upstream, there are greater shortages of water resources in the downstream irrigation district. Unified distribution of water resources under these conditions with consideration for both upstream and downstream areas is of course a necessary organizational measures. Otherwise, the irrigation district will move, which wastes human, material and financial resources and causes a loss to society.

3. No one manages the atmospheric water in an irrigation district. Surface water is managed by irrigation administration units, and underground water is managed by the communes and brigades. This can lead to a failure to retain atmospheric water, to an inability to meet the demand for surface water and to an unwillingness to extract underground water. On the one hand, there is a shortage of water sources (surface water); on the other hand, there is a disastrous excess of water (underground water).

4. In a ravine, especially one that cuts through two administrative regions, the lack of a unified planning often leads to construction of a reservoir downstream, another one in the middle reaches, one upstream and yet another even further upstream. This can influence the actual benefits as well as unity.

5. There is very severe water pollution in some rivers such as the Weihe River in the Guanzhong area of Shaanxi. This type of pollution can lead to problems of even more serious pollution of underground water. No one has ever become concerned about this. Such a problem should raise a great cry in our water conservation departments and in public health departments.

For this reason, it is my opinion that leadership organs should consider a conscientious solution to the "unity" problem.

IV. The question of future developmental directions in water conservation. Everyone knows that regardless of which history of water conservation one leafs through, there was always a movement from the easy to the difficult, such as from gravity flow to water lifting, and, within water lifting, from low-lift projects to high-lift projects. In the larger picture, there has been too little development of irrigated land in the greater northwest and in the Guanzhong area, not too much development. Future development of irrigated land should depend mainly

on the development of water-lifting irrigation projects. The current problem, however, is that water-lifting projects have already developed to the point where water is being lifted more than 100 meters. Mention of developing water lifting causes some people to feel that, overall, it is not worthwhile. Water-lifting projects in tomorrow's new irrigation districts will be higher than in today's, however. The height of water lifting can only continue to increase over the next 50 to 100 years. Without developing water-lifting irrigation, there are no other routes for developing new irrigation districts. The primary form of disaster in Shaanxi is drought. According to historical records, Shaanxi has had a minor drought every year, a moderate drought every 3 years, a major drought every 10 years and an especially drought every 50 years. Apart from minor annual droughts, the number of years with moderate or greater droughts in the 30 years since liberation have been: 4 years in the 1950's, 7 years in the 1960's and 6 years in the 1970's. This confirms the importance and urgency of developing water conservation.

In the final analysis, is it worthwhile to develop water-lifting irrigation higher than 100-plus meters? In the Eastern Guanzhong and Yellow River Diversion Irrigation Districts, for example, the weighted average net lift is 153.8 meters, and the highest accumulated net lift is 293 meters. The installed machine capacity is 120 MW and the irrigated area is 995,000 mu. After preliminary calculation of the total benefits of irrigation, the average annual water and electricity fees have been 17.08 yuan per mu in the early stages and the average annual net benefits for the masses have been 25.08 yuan per mu. This means that it is still worthwhile. Moreover, the Eastern Guanzhong and Yellow River Diversion Irrigation Districts can remove 30 million tons of silt from the Yellow River each year, so it is even harder to measure the benefits.

In order to promote the development of water conservation and lower the cost of irrigation, following the problem of increasingly high water lifting, I feel that the leadership organs and the People's Government should give consideration to solving several policy problems:

1. The problem of cropping plans. The development of water-lifting irrigation causes fundamental changes in agricultural production conditions as well as fairly large increases in the costs of production and the output of farm products. Given these conditions, I propose that in accordance with state planting plans, crops with high economic value such as cotton, flue-cured tobacco, etc. should be concentrated in water-lifting irrigation districts according to local conditions to give full play to their advantages and create more wealth for society.
2. The problem of farm product prices. Given the relatively high cost of water and electricity fees in water-lifting irrigation districts and the fact that the peasants in the area that benefits must pay fairly high fees based on the value of commodity water, I propose that within the scope of policies for the coexistence of different prices, the People's Government should give consideration to permitting high-lift irrigation districts to use the average public requisition tasks over the 3 years

prior to receiving benefits as the base level after they receive benefits and to make purchases of the portion of farm products that exceeds contributions according to above-quota purchase prices. This will permit the masses in the area which benefits to gain benefits apart from paying water and electricity fees.

3. For an initial period after an irrigation district is constructed and benefits are being received (such as 10 or 15 years), the situation is such that fieldworks are still not fully completed, the canals are still not stable, the land still has not been levelled, it is hard to guarantee timely water utilization, management levels are low, yields are insufficiently high and stable and so on. Water and electricity fee standards can be formulated according to the design levels. Irrigation management units can collect a portion of the water and electricity fees, while the other portion is subsidized by the state. As the period of receiving irrigation benefits grows longer, the subsidies can be gradually reduced and the fees collected can be gradually increased until the entire quota of water and electricity fees is collected.

4. Preferential electricity prices can be made available for high-lift water-lifting irrigation districts.

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CSO: 4007/56

BRIEFS

INTERNATIONAL CENSUS CONFERENCE--Having been approved by the State Council, the International Conference on the 1982 China Population Census will be convened in Beijing in March 1984. This conference has received support from the United Nations' Population Activities Fund. The focus of the conference will be on utilizing the data already obtained from China's Third Census to analyze the present state and developing trends of China's population, to assess the organization and implementation of the work of China's Third Census and to study the survey experience. In August the conference preparation committee comprised of comrades in charge of these matters from the Census Leadership Group of the State Council, the State Statistical Bureau, the Foreign Ministry, the Ministry of Foreign Economic Trade, the State Commission on Birth Control and the Agency Affairs Management Bureau of the State Council held two small-group meetings and basically determined the list of foreign invitees and the list of those who would prepare papers and other related matters. The secretariat of the conference preparation committee has already begun working, and the census offices of each province, municipality and autonomous region and the population research arms of each university and college are now actively organizing selected topics, organizing their efforts and striving to come up with high-quality papers to be a part of the conference. [Text] [Beijing RENKOU YANJIU [POPULATION RESEARCH] in Chinese No 6, 29 Nov 83 p 31] 9705

CSO: 4007/83

SUGGESTIONS MADE FOR REFORM OF WATER CONSERVATION INVESTMENTS

Beijing ZHONGGUO SHUILI [WATER CONSERVATION IN CHINA] in Chinese No 6, Nov 1983 pp 45-46

[Article by Zhuo Zizhi [0587 5261 3112] of the Fujian Province, Jianning County, Water and Electricity Bureau: "Some Opinions on Reform of Investment Patterns in Water Conservation"]

[Text] For a long time, the investment pattern we used in water conservation construction has been: operation by the local people with subsidy by the state. That is, it integrates uncompensated subsidies from the state with uncompensated investments (including investments of labor) by communes, brigades and the masses. This investment pattern played a certain role under the special conditions of the past. There are, however, several drawbacks:

1. There is competition for investments and projects. Because the state investments are uncompensated, many comrades want to have more "good intentions" for water conservation construction in their own region. They compete in every possible way for investments and projects. Many did not hesitate to resort to deception in such competition. They expanded the scale of projects, exaggerated the ability of communes, brigades and the masses to raise local funds and falsified project results.
2. There are construction delays, and benefits are not obtained for long periods. There are continual expenses because the projects were obtained through "competition," because the preparatory work was not done well, leading to frequent design changes and cost overruns, and because local investments were not forthcoming. This often leads to the following situations: one is that the core project itself is not even completed and the capital has been spent, which leads to "half-filled grain"; another is that a portion of the subsidies given to the project are centralized in the core project while there is no way that subsidiary projects can be completed; a third is careless "cost conservation" which lowers project standards and quality. The projects are completed but there are endless "eliminations of dangers and reinforcement." The result is continual delay in the construction and no benefits for a long period.

3. The state communalizes the peasants' property and the peasants rely on state subsidies for food. In the past, locally generated investments in water conservation involved contributions of labor by the peasants. Complex situations have appeared in this regard: a small type- or -2 project does not depend on the labor power of the production teams which benefit but instead calls for "cooperation" to motivate the peasants of several brigades or teams that do not benefit to participate in labor. When will the labor of this "cooperation" be repaid? How will the labor of those that benefit be repaid? No one asks. In reality, this is "egalitarianism and indiscriminate transfer of resources." Because they contributed labor, the peasants feel that the project was built with their own labor contributions. Thus, they can have an easy conscience about using water without paying for it. Moreover, when the peasants were mobilized to contribute labor, the emphasis was that water conservation could increase production and that more grain could be sold and greater contributions made. There was no mention of the economic benefits that increased production could bring to the peasants. It appeared that the state only developed water conservation whenever it needed grain. This led to a psychology among the peasants that caused them to see subsidies for water conservation as something natural.

4. The situation described above brought two problems for basic-level water conservation administrative departments. One problem was that science and technology in water conservation lost its developmental impetus and there were few new ideas in construction techniques. This led to cost overruns and construction delays. The other problem was that water usage fees could not be collected. The normal expenditures of project administration could not be maintained and there was a long-term reliance on loans for operation. Many advanced administrative units developed a diversified economy with apparently good results. In reality, a good diversified economy was only possible because the water conservation projects communalized the products of economic diversification and "ate from the big common pot."

Without reforms in current investment patterns, malpractices cannot be eliminated, waste cannot be avoided and economic benefits cannot be improved. The core of such reforms is to transform the current system of uncompensated investments into compensated water use (non-payment of water fees cannot be permitted, nor can there be only symbolic payment of "water fees"). Water conservation projects should be run as enterprises. This means calculation of "inputs" as well as "outputs." The main sources of investments should be bank loans and "shares" from other enterprises and departments. In consideration of the actual situation, there can temporarily be interest-free loans with a gradual transition to interest-bearing loans. Project income should mainly be derived from water fees and fish raising. Projects should be managed as enterprises which assume sole responsibility for profits or losses and which pay taxes to the state. In this way, it becomes impossible for projects to ignore economic results. Before construction begins, consideration should be given to the market for their product--"water." Supply and marketing contracts should be signed with

the peasants which stipulate the time when the supply of water will begin, the prices and the methods for fee collection. The situation will be quite intense when the project construction begins. This will guarantee that products will be produced within the shortest construction period and that the best programs and science and technology will guarantee that the greatest benefits will be obtained with the smallest investments.

When a portion of the investments for a project comes from outside shares, there should be contracts which stipulate stock dividends. When the peasants who will benefit make investments in the project in the form of labor, they should be given "promissory notes" when the project is completed and accounts are settled. The "promissory notes" can be paid off over a period of years through reduced water fees.

The peasants should be permitted to invest privately or collectively in and operate very small-scale projects. This was not possible in the past, but the rural economy is flourishing now and there are more and more "10,000-yuan families." Under these conditions, one or more peasants can join together to run one, two or even more small-scale water conservation projects. They now have the full economic capability to do this (the state can also issue them loans). There has been a total of 2,023 projects constructed in Jianning County since liberation with a total investment of 17.46 million yuan. Of these, 1,999 were very small projects with a total investment of 13.36 million yuan, an average of only 6,683 yuan per project.

There are several possible scales for collecting water fees. One scale is from the peasants, factories, mines and enterprises that directly use the water; a second is from small enterprises which use water within the administrative units of water conservation projects, such as generating stations or water conservation processing plants; a third is transit fees for boats or timber and so on. The past standards for water fees for farmland irrigation water were commonly too low. What is actually the best amount? It should be determined by calculation. The method of calculation is: if the total investment is to be repaid over a period of 10 years, the amount to be repaid annually is added to yearly administrative and maintenance expenses, while income from fish raising and other income from water fees (water used for power generation, etc.) are deducted. The remainder is then divided by the irrigated area. The result is the annual water fee per mu that should be paid (or the water fee per cubic meter of water can be derived according to the irrigation quota per mu).

Fields with guaranteed harvests despite drought or waterlogging have been established on 103,540 mu in Jianning County since liberation, with investments of 17.45 million yuan, an average of 169 yuan per mu. Of this amount, 86,540 mu of land are under irrigation by very small projects, with investments of 13.36 million yuan, an average of 154 yuan per mu. This amount includes several projects to repair flood damage. If this latter amount is deducted, we estimate that the investments per mu could fall to 135 yuan. Moreover, once they are done through individual or collective investments by the peasants, waste can be overcome and careful

calculation and strict budgeting can further reduce this amount. There is now an upsurge in grain production by specialized households in rural areas. Agricultural science and technology should be used to expand the depth and breadth of production and greatly improve production efficiency. With a major increase in the percentage of marketed farm products, there will be no problems in paying water fees.

Reducing the burden of water usage requires urgent strengthening of management and administration in administrative units, improving the level of administration, reducing administrative and maintenance costs, striving to improve irrigation techniques and expanding the irrigated area, strengthening control and transport, increasing water resources and reusing water. At the same time, we should also strengthen the diversified economy, expand benefits and increase income.

As for completed projects, they should be turned over to administration by water conservation companies, specialized households or combined households according to specified times and areas with planned and reliable valuation. In this way, the project builders and managers will centralize their financial and material resources to obtain results earlier. The overall pace of construction will be fast, now slow.

These reforms, of course, will not be so easy to implement in reality. There are traditional influences here, as well as some problems that must be solved. It should be noted, however, that reforms are unavoidable. They can be done well if we only strengthen investigation and scientific research in this area and adopt the appropriate measures.

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CSO: 4007/56

USE OF GANSU CORRIDOR WATER RESOURCES ANALYZED

Beijing ZHONGGUO SHUILI [WATER CONSERVATION IN CHINA] in Chinese No 6,
Nov 1983 pp 40-41

[Article by Xu Zhaosiang [1776 0340 4382] of the Gansu Province Geology Bureau Geological Scientific Research Institute: "Some Preliminary Opinions on Water Resource Utilization in the Gansu Hexi Corridor"]

[Text] The Central Committee recently decided to speed up construction of the Hexi commodity grain base area in Gansu and brought it into national plans. This is an important strategic decision for the vigorous development of agriculture in the province and for the acceleration of the construction of the state economy in Gansu.

The Hexi commodity grain base area in Gansu Province includes 15 farming counties, 4 animal husbandry counties (Tianzhu, Sunan, Subei and Akesai) and 17 agriculture and animal husbandry state farms in the 3 prefectures of Wuwei, Zhangye and Jiuquan and in Jiayuguan and the Jinchang Cities. The entire Hexi region currently has 10.21 million mu of cultivated land. A total of 144 medium and small reservoirs have been built to date in the Hexi region, with an effective capacity of 800 million cubic meters. Because of quality problems in some of the reservoir projects, however, the actual water reserve is only about 600 million cubic meters. There are now about 12,000 km of primary and secondary canals, and 38 percent of the canal system has not yet been lined with masonry. The region currently has more than 25,600 fully outfitted mechanical wells which irrigate 7.89 million mu.

The Hexi Corridor has superior natural conditions and unusually vast land resources. There is a great deal of sunlight, sufficient light and warmth and abundant water resources. There is an exceptionally rich material foundation of soil and water for the development of agriculture and animal husbandry. In the area of land resources, for example, the region has over 20 million mu of reclaimable wasteland, 5 million mu of which is agriculturally useful wasteland with water conservation conditions that can be reclaimed and cultivated. In the area of water resources, the Hexi Corridor has 3 large inland river systems (the Shiyang He, Hei He and Shule He River systems) and a total of 56 large and small rivers and streams

that pour out of the mountains, with a long-term average flow of 6.9 billion cubic meters per year (of which 1.96 billion cubic meters come from springs). The net cultivated land area irrigated with wells is about 1.7 million mu. There are 1.17 billion cubic meters of water drawn each year, mostly by the net well irrigation district in the Shiyang He River basin. Some 890 million cubic meters are extracted each year from the Shiyang He River basin, equal to 76.5 percent of the total extraction in the Hexi Corridor. In relation to natural underground water resources, 87 percent of underground water replenishment is being extracted in the Shiyang He River basin, but only 7 percent in the Hei He River basin and about 4 percent in the Shule He River basin.

The above data show that there is definitely a great potential for the existing water resources in the Hexi Corridor, especially the enormous water resources in the Hei He and Shule He River basins which await further rational development and utilization.

The special characteristic of the formation of underground water resources in the Hexi region is that seepage of returning water from rivers, canals and field irrigation is a major source of replenishment. Replenishment from other sources, in comparison, provides only secondary amounts. After the gravel desert zone at the foot of the mountains is replenished, there is a large spillout of spring water at the frontal edge of the fine-soil plain which then becomes a major component of downstream river water. After the river water flows into the downstream basin, it again seeps out and replenishes the underground water. It then repeats the recycling process between surface water and underground water as it did in the upstream basin. In the end, it is dispersed in desert or salt-marsh areas, or it seeps into an inland salt lake and is consumed through evaporation. For this reason, problems of mutual influences or interference can appear when independently developing surface water resources or exploiting underground water resources. This problem is clearly visible from the practice of water resource development in the Shiyang He River basin. For example, construction of water conservation projects and improvement of leakage prevention in canal systems will reduce the replenishment of underground water by river and canal water. This can lead to a regional lowering of the water table or reduce the flow of spring water in spillout zones. Large-scale development of well irrigation and excessive extraction of underground water can affect the flow of nearby springs or downstream river water.

The highest degree of development and utilization of water resources in the Hexi region occurs in the Shiyang He River basin. After 30 years of construction of various types of water conservation projects, surface water utilization is about 1 billion cubic meters each year, and underground water extraction has reached 890 million cubic meters per year. Analysis of a large amount of data and comparison of the early 1960's with the late 1970's shows that the results of evolutionary processes and repeated distribution of regional water resources are that there has been an expansion of the cultivated land area in the southern half of the Wuwei basin (to the foot of Qilian Shan) and the amount of mountain water used

for irrigation has increased by 93 percent. There has been a corresponding reduction in the amount of surface water flowing into the northern half of the basin and the downstream Minqin irrigation District. The amount of underground water replenishment has been reduced because the river water is being stored in reservoirs and the canal system has been lined. There has been a universal drop of 10 to 15 meters in the water table of a large gravel zone, and the flow of spring water in spillout zones has been reduced by 70 percent. The amount of water transported into the downstream Minqin and Changning Irrigation Districts has been cut by half. This forces a large amount of well drilling and excessive extraction of underground water as well as extraction of highly mineralized water for irrigation in the Minqin Dam region and the Changning Irrigation District. The results has been a continual drop in the water table in these regions, gradual deterioration in water quality, the death of vegetation, desertification of land, salinization-alkalinization of land lake regions and other problems.

The above situation makes it easy to see that the problem is caused by the lack of unified development plans, rational coordination and comprehensive utilization of the region's water resources.

The Shiyang He River basin's hydrogeological conditions, formation of water resources, special transformational characteristics and problems that have appeared in development and utilization are somewhat representative of the three large inland-river basins in the Hexi Corridor. For this reason, comprehensive summarization of the experiences and lessons from the development and utilization of water resources in the Shiyang He River basin is very important in guiding the development and utilization of water resources in the Hei He and Shule He River basins. Thus, in the planning process for an entire river basin, apart from considering the equilibrium of water and soil resources, economic and technical rationality and other factors, we should also do more detailed research on the following aspects:

First, changes in the current situation of water resource utilization in upstream and downstream areas of a river basin can cause regional redistribution of water resources to a certain degree, which can lead to negative consequences because:

1. There can be a regional drop in the water table whenever there is a continual increase in the utilization rate of surface water. This can lead to a substantial decrease in the spring water that is now being so widely used. Large-scale well drilling to raise water for irrigation can also result in a great decrease in the amount of spring water.
2. For the middle and lower reaches of the river (i.e., between the southern and northern basins), when there is a reduction in spring water in the southern basin (the middle part of the river basin), there can also be a corresponding decrease in the water resources flowing into the northern basin (the lower reaches of the river basin). The reduction in

water resources entering the northern basin implies that there has been a reduction in the underground water resources of the northern basin and can also lead to a regional drop in the water table.

Second, there is the question of how to utilize natural underground reservoirs. The water-bearing layers in a large part of the Hexi Corridor are very thick and form especially large natural underground reservoirs. These conditions can be used artificially to carry out regulated storage and transport of quite variable water resources. For this reason, there should be coordination of the construction of surface reservoirs or the construction of large-scale surface reservoirs and the utilization of underground water layers, and there should be comprehensive research on economic and technical conditions and on questions of advantages and disadvantages.

Third, there is the question of the water and salt balance in saline-alkaline soil irrigation districts. The northern area of the Hexi Corridor has predominantly low-lying blockages. Runoff is impeded and there is intense evaporation. There are now widely distributed saline-alkaline lands. From the perspective of soil improvement, most of this type of reclamation area is found where the water table is too high or where there is excess moisture content. In order to benefit the lowering of the water table in irrigation districts, we must first of all study local development and utilization of underground water to carry out irrigation and salt leaching (well irrigation and well drainage) so that we can receive benefits from either irrigation or drainage at the proper time.

In summary, there are great prospects for developing the state economy and agriculture in the Hexi Corridor. The tasks of development and construction are formidable and involve a complex struggle to utilize and transform nature. For this reason, the direction of construction for water conservation development should be to pay attention to the particular natural characteristics of each river basin. In the southern Qilian Shan area, we should actively protect water resource conservation forests to benefit the regulation of runoff. The key points for irrigated agricultural districts of the Corridor plain are to make full use of surface water, rationally utilize underground water and improve the guarantee rate for farmland irrigation; the hidden zone in the northern part of the Corridor should strengthen the development and utilization of underground water, reduce evaporation and improve the soil. They should also reform irrigation techniques, use water scientifically, integrate drainage and irrigation, decide land utilization according to water resources, change the crop structure, readjust the ratio of summer to fall crops and achieve the proper solution to contradictions between industrial and agricultural water usage. There are still major potential water sources at present for the development and utilization of water resources in the Hexi Corridor. We need only to practice all-round planning, adopt the necessary artificial measures and strengthen the cyclical utilization of water.

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GUANGDONG REGULATIONS ON MARKET TRADE ANNOUNCED

Guangzhou NANFANG RIBAO in Chinese 9 Dec 83 p 1

[Text] On the ninth of this month, the Provincial People's Government promulgated the "Detailed Rules and Regulations for Administration of Urban and Rural Market Trade in Guangdong Province."

The "Detailed Rules and Regulations" provide that producers, after fulfilling State purchases, procurement assignments and contract obligations, may place on the market and offer for sale, or process and transport for sale Class I and Class II farm sideline products and Class III farm sideline products which are not subject to State monopoly purchases, procurement, except those which the State Council and the Provincial People's Government do not allow to be placed on the market or transported for sale. Producers, when they transport and offer for sale permitted farm produce and sideline products which are subject to State monopoly on purchases and distribution, at the time the products leave the county or province, are required to have a certificate issued by their local administrative management unit showing they have fulfilled their State purchase and distribution assignments. Certificated small retailers in the cities and towns may replenish their stocks from rural retailers and shippers, and also may go to the countryside to make purchases of farm produce and sideline products which are permitted to go on the market. The transportation and marketing of livestock, poultry, aquatic products, and foodstuffs must be in accordance with the provisions of (proposed) sanitation laws for foodstuffs, and in compliance with the various quarantine provisions of the local industrial and commercial administrative departments, sanitation and epidemic prevention departments, the sanitation management of the agriculture, animal husbandry, and fisheries departments, and general sanitation inspections of foodstuffs.

The "Detailed Rules and Regulations" also provide that base rural production units and the peasants individually, under the premise of serving production, and holding a certificate from the Township People's Government, may purchase farm cattle in some other county or province, and return them for sale locally. When rural craftsmen engaging in such activities as coppersmithing, blacksmithing, bamboo working, carpentry, bricklaying and masonry become laborers in the area markets of the local county, they should hold a certificate from the local Township People's Government or the Village People's Committee; laborers who come from outside counties or provinces should apply for registration with the local industrial and commercial administrative organs, and receive a temporary license.

The "Detailed Rules and Regulations" propose that it not be permissible to put on the market and offer for sale the following: goods which have been smuggled or trafficked illegally; imported goods which are mailed or carried back by overseas Chinese, Hong Kong, and Aomen compatriots; products which have been processed and assembled from imported components, products of compensation trade, and products of foreign capital, sino-foreign joint capital, or cooperative production which have not been approved for the domestic market.

The "Detailed Rules and Regulations" provide for those who violate the "Administrative Provisions for Urban and Rural Market Trade," and these present detailed rules and the regulations. Those who offer for sale fetishes, contraband and narcotic drugs, toxic, restricted, or potent medicines, bogus or inferior medicines, or poisonous foods, will have the goods confiscated and may also be dealt a fine of 500 yuan or less depending on the seriousness of the case; those who bring about serious loss should be ordered to compensate for the losses of those suffering injury, or be punished in accordance with the "Penalty Ordinances for Public Security Control"; those who cause serious injury or death should be delivered to the judicial organs to be investigated for criminal responsibility in accordance with the law.

Those who use tubular spring scales, old style scales and substandard measuring instruments for the purchase and sale of commodities, will have the instruments confiscated; and those who intentionally practice fraud, may also be dealt a fine of 50 yuan or less. Dealing with each in turn, for those who represent fake goods as genuine, mix or blend goods and misrepresent them, or short others with false measurements, aside from being ordered to compensate for the losses of the purchasers, should be dealt a fine of 10 times the amount of the deficiency and the fake goods be confiscated; serious cases of those refusing to mend their ways despite repeated admonition will be dealt with according to their behavior as profiteers.

Those who exchange worthless negotiable certificates of any kind for valid certificates shall have all certificates confiscated.

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CSO: 4007/65

COUNTY-LEVEL AGRICULTURAL ZONING REVIEWED

Beijing NONGYE JINGJI WENTI [PROBLEMS IN AGRICULTURAL ECONOMICS] in Chinese No 11, 1983 pp 43-44

[Article by Wang Yihui [3769 5030 1920], Agricultural Zoning Office, Xishui County, Guizhou Province: "Preliminary View of Some Problems of County-level Agricultural Zoning"]

[Text] Agricultural resources surveys and agricultural zoning at the county level are strategic studies of agriculture which are all-encompassing, extremely difficult and very comprehensive. I would like to discuss my preliminary views of some issues which I experienced in the work of agricultural zoning, a field in which I was engaged in the last 2 years.

I. On the Place and Role of County-level Agricultural Zoning

County-level agricultural zoning is a basic task of agriculture relying on sciences and is a component cell of national agricultural zoning as well. (1) The differences among agricultural areas are very distinct, among which the mountain areas are especially prominent. Only after we recognize them can we better use and reform them and work out the best economic result. This is exactly our basic task in agricultural zoning. Speaking of our Xishui County, its land formations are of various types, its social and economic conditions are different and the differences of climate here are great. We may say that in Xishui County, "there are four seasons in a single mountain, various kinds of climates within a distance of only 10 li and various kinds of earth within a few steps." Within the boundaries of Xishui County, the lowest small flatland and floodland are 275 meters above sea level, and the highest yellow sandstones are 1,871.9 meters; their relative difference in height is 1596.9 meters. When spring returns and willows become green again at the lowest places, the cold wind is still blowing in the highest places and remaining snow can be seen there. Under such conditions, how can the distribution of agricultural production be the same? In some places, their heights above sea level may not be much different, but conditions such as geographical location, forest vegetation, population, labor power, culture, technique, etc. are varied, so that their agricultural structures, crop distribution and planting systems are varied as well. Take the Yong'an and Zhaiba Districts of Xishui County as examples. Their heights above sea level are not much different,

but the former is an arid area while the latter is a moist area of autumn wind. The "autumn tiger" (a spell of sunny weather after the beginning of autumn) will cause a drop in crop production in Yong'an, and a good harvest in Zhaiba. We have analyzed these two districts' grain output of the last 21 years, and figures of 16 of those years show a "seesaw" situation--gains in the former while drops in the latter and vice versa; other examples are the areas in the valley of the Chishui River and the lower reaches of the Xishui River that are the same height above sea level but separated by a mountain. The rice variety in the former has regenerated for three generations but in the latter, the old variety still occupies a dominant position. All facts show that doing well in county-level agricultural zoning is extremely necessary for speeding up the development of China's agriculture in line with local conditions and for giving full play to strong points and avoiding weak ones.

(2) By going through the agricultural resources survey and agricultural zoning, we can find out the strong points and disadvantages of each area in order to help determine strategic measures and to speed up the building and development of agriculture in ways to enhance the advantages and avoid the disadvantages. In the past, we didn't recognize treasures even if treasures were around us, and we didn't know how many precious deposits were underground. In the present zoning work, after we collected and sorted data and conducted complementary surveys, we have appraised and described in general detail 27 useful minerals which have been found and the geological features, scales, grades and evaluations of reserves of 116 mining areas and compiled the "Geological and Mineral Record of Xishui County" in 245,000 words. Based on the data in this "record," eight small coal pits have been newly built one after the other in Xishui County since 1981. They are successively being put into production now, and after the completion of all of them, an estimated 120,000 tons of productive capacity will be added annually. Another example is that in the past, aridity was always regarded as the major natural calamity of Xishui County. This old conclusion has been overturned by the Climate Zoning Team, which analyzed and compared agricultural climate data and the increasing and decreasing figures of grain production over many years. Now, the autumn wind is regarded as the major calamity and aridity as the second. In the past, based on a one-sided view, we blindly built reservoirs in the moist areas of the autumn wind, and it tired the people and drained the treasury; in contrast, we rarely conducted studies, indeed, of what kind of measures should be taken to fight the autumn wind and the overcast and rainy weather, and this led to great losses.

(3) County-level agricultural zoning is small in scale and sharp in direction. It is convenient to organize and implement and get instant results. The unit at the county level is the direct leader and organizer of agricultural production, and it plays a role of frontline headquarters in determining strategic aims, making plans, adopting measures, defining investment, organizing to carry out agricultural plans, etc. The realization of the national macroeconomic aim of agriculture relies exactly on the microeconomic development of several thousand counties. The rational

distribution of the regional agricultural structure and the ways and measures for its implementation put forward by county-level agricultural zoning on the basis of making a thorough survey of resources are visible and can be felt, and they are convenient to organize and implement and can therefore turn latent productive capacity as a result of agricultural zoning more quickly into an actual economic outcome.

II. On-the-spot Survey Should Be Strengthened in County-level Zoning

In 1982, the Comprehensive Team of Xixhui County Agricultural Zoning spent 66 days on a 3,000-li tour to survey extensively the regional differences and the local superiorities of agricultural resources all over this county in order to have a fairly good idea of the direction and ways of the development of agricultural production and to know how to handle some long-standing, big and difficult problems in the agricultural production of this county. For example, the woodland of Tian'e Commune is 90.3 percent of the total land area, an average of 47.5 mu per person. The condition of forest production there is excellent, but peasants living under a ready source of money like that are really poor. Why? The reason was: "People living in the forest were not engaged in forestry, 80 percent of the labor power as in ploughing and weeding, the planting of crops in the forest was disastrous and so a poor, man-made mountain area had been created." In the survey, many models which used the superiorities of the mountain areas to cure poverty and create wealth have been found and they inspire our confidence in quadrupling agricultural production. In the production of green tea in Zhaiba District, for example, because of its having a good ecological condition and carrying out the output-related contracted responsibility system on the household basis, there were four big advances in 4 years since the 3d Plenary Session of the 11th CCP Central Committee. The total output in 1980 was 400 dans, over the highest level in history, and 600 dans in 1981, 790 dans in 1982 and about 1,000 dans this year. Examples collected in surveys like those mentioned above have provided much first-hand data for the compilation of the "Report on Comprehensive Agricultural Zoning."

III. The Application of the Result of Zoning Is the End Result of All Agricultural Zoning Work

First, the economic outcome created with the application of the zoning result is big or small, depending on the quality of the agricultural resources survey and the zoning at first. The higher the quality of zoning is, the bigger the value of the application of the result created. This guiding ideology must always be adhered to in the whole zoning work. For example, the "Agricultural Climate Zoning of Xishui County" was printed as early as in 1980 and received the Guizhou Provincial Fourth Prize for Scientific and Technological Results of 1982. Normally, it can be accounted for, but this is not at all the aim of our zoning work. We hold that there is still something which was not handled scientifically and completely in that compilation. Therefore, we made up our mind to conduct the agricultural climate zoning a second time. The zoning result is much better

in precision, in range and in depth than it was the first time with respect to the resources survey, climate analysis and climate zoning. All these will surely create good outcomes in the application thereafter.

Second, achievement of results and their application must be stressed while conducting zoning work. It generally takes 1 or 2 years to complete the agricultural zoning of a county on all sides. And the completion of systematic zoning and the comprehensive agricultural zoning or that between different systems may occur at different times. And also, times spent in getting results from a special survey report are much shorter than those spent in getting a final zoning result; therefore, to have results and their application while conducting zoning work must be and can be implemented. For example, in the zoning work of Xishui County, 21 special survey reports and theses were compiled, and one-third of those have been sent to leading authorities and productive units for realistic application. Among them, the "Survey and Suggestions on the Present Situation of Hydroelectricity in Rural Areas" was accepted by the county government and departments of hydroelectricity. Situations such as multiple management that were actually short of concern have been changed. Now, it is under the unified management of the hydroelectricity departments, and an agricultural electricity company has been set up to make construction, equipment settings and management a coordinated process. The "Cause of Formation and Reform of Measures of Low-yield Fields in Xishui County" was applied, and the reforming steps of low-yield fields all over the county have been sped up; the "Survey on Fruit Resources and Their Zoning" has been put forward to the light-industry department as the basis of the first-period demonstration for the expansion of the Xishui Canned Fruit Plant. According to suggestions on the adjustment of the variety structure of forests and in addition to the management organs of the forest administration put forward in forest zoning, the forest department set up the Division of Forest Administration and increased the proportion of afforestation of economic forests. Last winter and this spring, 61,635 mu of land were afforested in the whole county, 35 percent of which were economic forests. The proportion of economic forests before zoning was less than 10 percent. Meanwhile, applying zoning results to actual use while conducting zoning work has deepened the knowledge of leading cadres and comrades who are engaged in zoning work on the important role of agricultural zoning and has strengthened their confidence, and this promotes the development of zoning work and improves its quality.

Third, after the completion of the zoning work in the whole county, it should turn to a complete application of results, such as cultivating and training cadres, publicizing the scientific and technological knowledge of results, taking part in making programs and plans and organizing their implementation, monitoring the movement of agricultural resources and turning the results of zoning into actual economic outcomes. Practices such as laying the results of zoning aside and neglecting them or dismissing working teams right after the completion of zoning work must not be allowed to continue.

CALL FOR FURTHER REFORM OF CHINA'S RURAL ECONOMY

Beijing CHINA DAILY in English 29 Mar 84 p 4

[Article by Li Li'an, secretary of the CPC Committee of Heilongjiang Province]

[Text] Agriculture in Heilongjiang Province has changed from a scattered and backward self-sufficient and semi-self-sufficient economy to large-scale commodity production. This is a turning point of great significance.

What should a socialist rural economy be? There is no answer in Marxist classical writings. Neither can we copy experiences from other countries.

Unfortunately, during the 1950s, we prematurely laid down the pattern of the rural economy, the people's commune system to which we adhered for several decades. The system had always been considered the only road to socialism, collective ownership, with the production team as the basic accounting unit; and collective work to achieve collective prosperity.

In addition, we criticized "fixing output quotas for each household" and condemned the "individual farming household" as a remnant of capitalism.

These have made a lasting impression on us. Hence, when there is a new call from the central Government, and a new demand from the people, we still worry about the effect on the collective economy and that farm mechanization might become a fiasco.

In 1983, 92 per cent of production teams in the province implemented the contract responsibility system based on the household. Specialized households, altogether 869,000, constituted 23 per cent of the total.

Total grain production exceeded 7.5 million tonnes and total value of farm products exceeded 11.65 billion yuan (about \$5.82 billion), and per capita personal income of commune members reached 313 yuan, an all-time high. Farm mechanization did not collapse; on the contrary, the number of tractors increased by 18 per cent.

For a long time, we didn't acknowledge the theory that commodity production is indispensable to a socialist country. We have tried constantly to skip

the phase of a market economy, and leap from a self-sufficient and semi-sufficient economy directly to large-scale social production. Experience has proved that we cannot do this.

Experience

In the course of our work, we usually focus our attention on production while disdaining marketing, on grain production while overlooking other farm operations.

However, last year, commodity production in the province increased considerably. We produced a lot more grain, sugar beet, sheep and milk than we could sell. If marketing cannot pace with production, output will be restrained.

We must rid ourselves of egalitarianism. For a long time, we have worried about the division between rich and poor in the countryside, and always stressed that peasants should get rich collectively.

Egalitarianism does not accord with objective laws of development. What happened in our province was that peasants were hindered by working collectively because the diligent became lazy and the better off became poor. Per capita income in rural districts was only around 250 yuan accounted for 22 per cent.

After the implementation of the contract responsibility system based on the household, rich households emerged, of which a few had an annual income of more than 10,000 yuan (\$5,000).

In 1983, poor household fell by two-thirds and personal income per capita increased by 25 per cent. This explains that disparity in income among peasants was not necessarily because some were being exploited by others. It may only be a matter of people becoming rich earlier or later.

The major shortcoming of government-run business is its rigidity and inactivity. A market economy requires vigour.

Last year, Zhangdong County restructured its rural commerce by switching from government-run business to agriculture and trade companies jointly operated under the leadership of State commercial enterprises. There was a bumper harvest in garlies, scallions, celery [sic], cabbages, watermelons and potatoes. The jointly operated companies sent out more than 3,800 sale promotion letters and the products were all sold.

We should abolish the State monopoly over purchasing and marketing, and establish the principle of the planned economy supplemented by market regulation.

Joint Operation

We should allow some agricultural products, after the fulfilment of State purchase quotas, to be sold on the free market, and allow them to be shipped out of our province.

We could also open the free market a step further by letting State and collective enterprises participate, both in retailing and in wholesaling. We should allow prices to float according to supply and demand. Formerly, grain sales were not allowed into the free market, so that prices stayed high.

Last January, once State purchasing quotas had been met, we allowed grain to be sold on the free market; the prices of rice and soybean oil fell considerably. Speculators could not make excess profits anymore. Thus the free market supplement acted as a regulator and gave vitality to the economy.

Finally, we should shun the management of the economy through administrative means and let economic laws direct commodity production and marketing.

According to a survey, rural production and marketing are directed by 14 different government agencies. Sometimes, the production of one variety of grain is under the jurisdiction of several government agencies. They usually do not agree with one another and argue endlessly.

Unnecessary duplications of links in the chain of distribution hinder the flow of agricultural products. The system should be reformed gradually. The style of leadership also needs to be changed. We should learn how to do business efficiently, to stress the value of cost accounting, and apply the law of value in directing commodity production and marketing.

(from Outlook)

CSO: 4020/103

STATE FARMS' SPECIALIZED HOUSEHOLD PRODUCTION

Beijing NONGYE JINGJI WENTI [PROBLEMS IN AGRICULTURAL ECONOMICS] in Chinese No. 11, 1983 pp 51-53

[Article by Yang Rongqiu [2799 2837 4428], Heilongjiang Provincial Institute of State Farm Economy: "A Talk on Specialized Household Production in State Farms"]

[Text] The surge of specialized household production (including households which are mainly doing one specialized job and sideline work concurrently) in the reclamation areas of Heilongjiang is a new occurrence in recent years. A widespread concern has been brought to the inside and outside reclamation areas even though the history of these areas is very short, the number of people going for it is not large and its scope of operation is rather small and occupies only a place of little importance in the economy of the reclamation areas. In this article, I would like to discuss the above issue on the basis of my superficial understanding.

I.

In the past year or so, the development of specialized household production in the Heilongjiang reclamation areas shows that there are not only specialized households of staff and workers contracted with the farm on the basis of sharing the work but also self-operated specialized households which are organized by the idle labor power of the society, part-time workers and even auxiliary labor power and those developed from household sideline production. As for a few specialized households of staff and workers whose posts and ranks are preserved but whose salaries have been suspended, some are working on contracts or are self-operating or both. Their specialization is crop farming or raising domestic poultry and animals and collecting, weaving and even processing or repairing as well. Most of the specialized households receive fairly good incomes in a rather short period, and state farms also enjoy certain economic benefits from them. According to incomplete statistics, by the end of 1982 there were 11,000-odd households of different specializations in the Heilongjiang reclamation areas, and the output value was nearly 10 million yuan.

Along with the further implementation of various economic responsibility systems in the reclamation areas, specialized household production has undergone a new development since 1983. The development of different kinds

of specialized households of those staff and workers whose posts or ranks are preserved but whose salaries have been suspended is the most rapid, and many party members, cadres, staff members and workers with certain specialized techniques have joined the ranks of specialized households. At the Administrative Bureau of Nenjiang State Farms alone, this category of staff and workers has reached over 5,500, about 12.5 percent of its staff and workers. The raging tide of specialized household production is surging forward.

II.

The increase and development of specialized household production in state farms are defined by its own characteristics. The fact is that in specialized household production, the investment is small (absorbing idle funds from staff members and workers in the main), the effect is instant, the result is big, the production is flexible, the adaptability is rather strong, the good points of producers can be brought into full play, local resources can be used in line with local conditions, socioeconomic conditions can be adapted locally and in a timely manner and the supplementary role to the state-owned economy can be actually played.

The development of specialized household production in state farms has a far-reaching significance.

First, it promotes the process for turning farms toward a commodity economy. Over a long period of time, the output value of production of all fields--forestry, husbandry, sidelines, fishery and grain and soy bean)--in the Heilongjiang reclamation areas was no more than 10 percent of the total value of agricultural production, and 72 percent were of the self-sufficient economy. The commodity production of industry was only 38 percent of the total industrial output of all reclamation areas as well. This shows how weak the productive capacity of the diversified commodity economy was! After the surge of specialized household production, this kind of production turns in to a commodity one. Along with increasing improvement of its expanded reproductive capacity, the varieties as well as the quality of commodity will increase, and this will speed up the development of the processing industry in which diversified-economy products and different agricultural and sideline products are used as raw materials and will promote the process of turning the self-sufficient and semi-self-sufficient economies of the state farms into commodity economies.

Second, specialized household production promotes the development of the specialized division of labor and socialized cooperation in state farms. Because of some historical reasons, China's state farms gradually became small communities which are "small but have all the necessary fittings" in which "nothing is dependent on the outside." Staff members and workers (especially common farming workers) there became "jacks-of-all-trades," who did every job at the will of the authorities. This seriously hinders the progress of technique and the improvement of productive forces and causes difficulty in forming commodity production with great economic

results and strong competitive power from the diversified economy of many farms. The skillful technique of specialized household production has long been mastered by the household members, even before the specialized household is defined, and now they can use it, or some of them quickly master the technique for specialized production after their households are defined as specialized ones. This stimulates the progress of technique and certainly gives impetus to the development of the division of specialization. At present, in farms where specialized households for raising domestic poultry and animals are concentrated, specialized households for breeding, incubation, fattening, feed-processing and purchasing have developed. The 8511 Farm, well known for its excellent-quality milk products, has set up special organs to supply improved cattle and fodder as well as technical service such as breeding, epidemic prevention, treatment, feed lot management, etc. to the rapidly growing specialized households for cattle raising on the farm. This greatly promotes the development of the production of those households. The practice proves that the relation between sharing the work and cooperation is interdependent, and the successive development of specialized household production will certainly provide rich and beneficial experiences for the reorganization of state farms according to the principle of specialized cooperation.

Third, specialized household production smashes the trammels of traditional ideas about farms, creating a wide path for economic development. For a long period of time, there was a model in people's mind that a state farm meant a mechanized grain farm owned by the whole people and that a high degree of "unification" was required, so that a lot of regulations were set and inflexible. These brought about rather narrow economic elements, operating methods, employment opportunities and circulating channels, fettering seriously the development of the farm economy. The surge and growth of specialized household production make it possible to have the load of increasingly surplus social labor power be set off; the great potential of the abundant resources which are left unused because of the shortage of funds, technique, equipment, labor and so forth can be noticed again. It is even possible for the productive structure to be improved step by step, and channels of circulation can be expected to be created further. In short, specialized household production has added a catalytic agent in the economic reforms which are developing rapidly, thus speeding up the step of state farms' economic reforms. According to the statistics of the administrative bureaus of the Jiusan and the Baoquanling Farms, in 1982 alone, 98 percent of their staff's and workers' children who were waiting for employment had been engaged in specialized household production while few of them had taken part in collective production. Therefore, the diversified economies of state farms under these two bureaus have sprung up all over, and ways of production are increasing, creating a brand-new situation of "making the best use of men and materials" which had never been shown before.

III.

The surge of specialized household production in state farms was not smooth sailing. Some comrades set it in very general terms against the state farms, where the mechanized level are rather high, so that various man-made obstacles are erected. Anyway, specialized household production is like an irresistible tide and has had a considerable development. Why?

First, specialized household production is suited to the standard of multi-level productive forces of the reclamation areas. In general, the level of productive forces of the state farms in Heilongjiang is comparatively high in the nation's agriculture. Nevertheless, development inside the reclamation areas is not even; as in the area of agriculture, the productive level of planting is higher while those of breeding, collecting and so forth are lower. In planting, the productive level of large fields where grain and soy bean are the main crops is higher while forestry and other cash crops and fodder crops are basically handled by manual labor, and the technology for them is comparatively backward. This uneven situation of productive forces certainly requires a division of labor and the diversification of organizations. Therefore, when farms are energetically introducing economic responsibility systems with contracted ones as their center, because the productive tools and technology are comparatively advanced for the production of grain and soy bean, labor productivity is comparatively high and more grouping and cooperating labor are needed, so that they are suited to be contracted by bigger collectives (machinery teams, groups or comprehensive teams of machinery and peasants). For the bigger orchards, herds of livestock, vegetable plots, reservoirs..., they are suited to be contracted by small collectives; as for specialized household production, most of it is concentrated in small-sized processing and repaired items and diversified economic items which are scattered and small-sized and consists basically of manual labor. The multilevel productive forces must have diversified organization forms and operating styles to meet them. The surge and development of specialized household production are just the inevitable and logical result of state farm economic development.

Second, specialized household production reflects the demand for the further implementation of the principle of "distribution according to work." People's material interest is the basic motive force of all social development, and the material interest of laborers is mainly realized through distribution. Undoubtedly, distribution is a component part of productive relations, but just as with other components, distribution reacts in a way which should not be overlooked on the productive forces. Even though there exists innate limitations of individual and scattered operation in specialized household production because laborers, operators and owners of productive materials are unanimous, the productive outcomes and the material interest of the laborers coincide as well. Not only can the enthusiasm of the laborers be brought into full play, but all the potential of the household manpower, finances and materials can also be mobilized efficiently to become actual productive forces, and this is a thorough negation of "eating rice from the big pot." Once the specialized household production is recommended,

more and more people become engaged in it. In spite of the fact that their operation is scattered and their equipment simple and crude, many of them are not strong physically and their technical level is low. However, their labor productivity and economic results are increasing step by step. Most of them have quickly exceeded the same specialization operated by state farms.

The reasons for the surge and development of specialized household production are many, but in line with economic law, only two of them are pointed out above. Of course they are far from completion. Nevertheless, the above alone are enough to show that it is because of the certainty of history and absolutely not because of somebody's subjectivism or administrative means. Though the system is still in the embryonic stage, its strong adaptability and exuberant vitality have been demonstrated. This is another encouraging step for the state farms' economic reform. Of course, the history of specialized household production is still very short, after all, and does not yet suit the established systems, policies and styles of economic management. However, so far as the leadership is strengthened, by supporting it fervently and by developing it in a healthy manner, it will certainly become a more and more important economic force in the path of creating modern state farms with Chinese characteristics.

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TOWNSHIP COOPERATIVES TAKE OFF IN HENAN

Beijing CHINA DAILY in English 30 Mar 84 p 1

[Text]

Henan Province has set up nearly 2,000 economic co-operatives at township level to keep pace with the rapid development of commodity production in the countryside, according to a People's Daily report yesterday.

Based on the former supply and marketing co-operatives, the new co-ops have taken over all units at the original commune level, such as agro-technical centres, farming machinery stations, rural credit co-operatives, seed-processing workshops, breeding or veterinary stations and other collectively-owned industrial and commercial enterprises.

The co-ops have helped co-ordinate commodity production and distribution activities of millions of peasants and provided them with technical assistance, credit funds and market information.

Recently, Vice-Premier Tian Jiyun visited a united economic co-op in Wuzhi County, Henan Province and said this type of co-op was a good way to invigorate the rural economy.

By the end of February of this

year, 95 per cent of the province's communes (townships) had established economic co-ops. Shenqiu, Wuzhi and Xinyang counties set up economic co-operatives at county level.

Serving as commodity distribution channels, the economic co-ops have done much in transporting and marketing various commodities manufactured by peasant households or co-operatives.

The Dayang village in Shenqiu County used to produce only about 300,000 kilograms of starch products a year because it could not find a larger market. But last year after it signed a production and marketing contract with the township economic co-op, it sold more than 1 million kilograms of starch products last winter with a profit of 900,000 yuan (\$450,000).

The co-op's market information service is also very helpful to peasants. The co-op in Wuzhi County holds regular conferences and provides forecasts peasant households which specialize in commodity production. It also publishes a news bulletin about market conditions.

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CRISIS OVER SURPLUS GRAIN SOLVED IN JILIN

Beijing CHINA DAILY in English 27 Mar 84 p 4

[Text] Jilin Province in northeast China has purchased 7 billion tons of grain harvested last autumn. Almost all the grain the peasants wanted to sell was sold. Money in hand, they are happy to buy what they need in the market. But they cannot forget that selling grain once posed a difficult problem.

Since the implementation of the rural responsibility system, bumper harvests have been reported annually. Yet peasants worry about how much grain the State will agree to buy and how to sell the surplus.

Last year, Jilin had a massive harvest. The peasants rushed to sell to the State purchasing centres. As a result, all the State storehouses in the province were filled. About 4 million tons of grain were left, and peasants sent telegrams to Beijing for help.

Vice-Premier Tian Jiyun and senior officials from the Ministry of Commerce, the State Economic Commission and the Ministry of Railways immediately headed for Changchun, the capital of Jilin. The State and provincial governments agreed to transport all grain under the quota that the province should sell to the State outside Jilin, while the rest was to be stored locally.

A provincial official calculated that it would take six freight trains, each with 45 carriages a year, to transport the 4 million tons of grain out of the province. "I was ready for imprisonment because I thought the grain would rot," said the official.

However, the grain did not rot. The provincial government issued regulations which required peasants to store State grain. The State paid 80 per cent of the money to the peasants, the rest to be handed over on delivery of the grain to State store-houses, when there was space. The State agreed to pay for stockpiling.

Some built simple store-houses, some erected brick frames, on which the golden corncobs were piled up, and some made grain bins with reed screens. In less than two months, the peasants of Jilin stored nearly 2 million tons of grain.

Peasants made money by stockpiling for the State. For each 5,000 kilograms of grain, the State paid 50 yuan (\$25) every six months.

Jiang Wande, a specialized grain producer in Huaide County, harvested 75,000 kilograms of grain last year. He stored 10,000 kilograms for the State. "In a year I would earn 200 yuan by stockpiling grain for the State," he said.

The story shows that a new system of commodity distribution is urgently needed in rural areas.

In the past, peasants were only just able to fulfil State grain quotas, and sometimes they failed. The introduction of the responsibility system in 1980 did away with the "big-pot," a system which guaranteed equal shares whether the peasants worked hard or not. Now, the State store-houses have proved insufficient to handle the abundance of grain. Therefore, more State storage facilities and improved transport arrangements are essential for further development of the rural economy.

(from Fortnightly Chats)

CSO: 4020/102

GUIDE ON BRINGING NORTHWEST INLAND AREA UNDER IRRIGATION DISCUSSED

Beijing ZHONGGUO SHUILI [WATER CONSERVATION IN CHINA] in Chinese No 6,
Nov 83 p 37-40

[Article by Xiao Sanwu [5135 0005 0063] of the Inner Mongolia Autonomous Region Water Conservation Survey and Design Academy: "An Inquiry into Questions of Developing Water Conservation in the Northwest Inland Area"]

[Text] The semi-arid and arid northwest inland region in China (hereafter called "the region") includes the Xinjiang Uygur Autonomous Region, the Hexi corridor in Gansu Province, Alxa League in the Inner Mongolia Autonomous Region and the Neiliuhe River basin in Qinghai Province. A total of 18 different minorities live in the region, including the Han, Uygur, Kazak, Monggol, Zang, Hui and other nationalities. The region has a population of 16.46 million and a total land area of about 2.46 million square km.

The region is bounded by A'ertai Mountain in the north, Zhunga'erjie Mountain in the northwest, the Pamir Plateau and Kalakunlun Mountain in the southwest, Quilian Mountain in the southeast and Helan Mountain in the east. This forms an enclosed geomorphological unit surrounded on four sides by mountains. In the interior, A'erjin Mountain, Tian Mountain and other mountains run across the region, forming a distinctive terrain with alternating mountainous areas and basins. There are 830,000 square km of desert. The terrain is high in the south and low in the north. It is not easily influenced by the southeast or southwest monsoons, while Siberian high-pressure cold currents coming from the Arctic Ocean and Mongolia have obvious influences in the region. This causes the region to have sufficient light and heat, sparse precipitation, intense evaporation and many sandstorms. Average annual precipitation is 200-600 mm in mountainous areas but only 20-200 mm on the plateaus and is just 3.9 mm at Toksun in Xinjiang. Annual evaporation is 1,500-3,000 mm and can reach 4,000 mm in some areas.

There are 585 large and small rivers in the region. Among them, there are 17 rivers with an average annual runoff of 1 billion cubic meters or more. There are 90 rivers with a runoff of 100 million to 1 billion cubic meters, and 478 with less than 100 million cubic meters. All of them are continental

rivers with the exception of the Emin, Yili and E'erqisi Rivers. The region has abundant glacial resources covering 263,000 square km that provide an additional 19 billion cubic meters of runoff on the average per year. There are many lakes and ponds in the region with an area of about 15,000 square km.

Development of water conservation is especially important in the region. In the early period after liberation, the total irrigated area was less than 20 million mu, and grain yields were about 100 jin per mu. In the more than 30 years since liberation, the region has constructed a large number of water conservation projects. The farmland irrigation area has reached 48.54 million mu. Grassland irrigation has reached 3.65 million mu and horticultural irrigation has grown to 2.86 million mu. Water conservation construction has made a contribution to agricultural development in the region. Control and water conservation in the Urumqi and Manas River basins have caused the irrigation quota to fall to 350-540 cubic meters per mu and yields have increased to 270-340 jin per mu. By practicing comprehensive control of mountains, water, forests, farmland and roads and by collecting fees based on water usage amounts, the Jinta Irrigation District has raised the effective utilization coefficient of the canal system to 0.64 and average yields have reached 593 jin per mu. Intensive management is now being practiced in forage areas in the Yaobajing Irrigation District. At the same time, as a result of overly rapid development and other reasons, there have been problems of low project quality, poor management and equipment incompleteness in water conservation projects. Water control projects on some rivers have not been appropriate, and there have been the unrestricted damming and drawing of water upstream, which have led to salt saturation. There is an extreme water shortage downstream which has caused the shrinking of oases and lakes and has led to the death of a large amount of forest area and grassland.

A comprehensive analysis of the special natural geography and the water conservation situation shows that this region now has favorable conditions for the development of water conservation and that there are also many unfavorable elements. Expansion of water conservation requires concentration on two criteria:

One is adherence to objective natural laws, rational utilization and strict protection of water resources to promote the transformation of the ecosystem into a beneficial cycle. The second is adherence to objective economic laws to derive the greatest benefits from the smallest expenditures, promote the development of agricultural production and continually raise the levels of the people's material and spiritual lives.

The developmental directions of water conservation in the region should be:

1. A systematic scientific viewpoint should be used to do good work in water conservation zoning and river basin planning.

To use a systematic scientific perspective for water control, we must observe the particular characteristics of the three types of water (precipitation, surface water and underground water). We must also take into account the relationships of mutual transformation among the three types of water. Consideration should be given to water conservation itself as well as to the interrelationships and mutual restrictions of water conservation, climate, soils, crops, grasslands and so on. Consideration must be given both to irrigation and drainage, and there should be engineering measures as well as adoption of biological measures. Water conservation, therefore, definitely is not a simple question of engineering technology. This is definitely not an isolated question. We must certainly do good work in regional planning and river basin planning for the development of water conservation. There should be unified planning that takes all factors into consideration, comprehensive control and the correct handling of the relationships between upstream, midstream and downstream areas, of the relationships between irrigation and drainage, of the relationships between engineering measures and biological measures and of the relationships between water conservation and the ecological environment in order to achieve the most proper utilization of water resources.

2. Existing projects should be managed and used well, and full play should be given to the benefits from water conservation facilities.

Currently, the water conservation administrative structure is imperfect, and administrative personnel do not have the necessary qualifications. According to statistics from 25 large irrigation districts in Xinjiang, there are an average of 5 administrative employees per 10,000 mu of land, of whom only 0.15 are technical personnel. Gansu has an average of 2 administrative personnel per 10,000 mu of land, of whom only 0.11 are technical personnel. For this reason, we must resolutely and quickly transfer the focus of water conservation in the region to administration and earnestly manage and use existing projects to give full play to their benefits.

3. The ideology which emphasizes agriculture while neglecting animal husbandry should be reversed and water conservation in the pastoral areas should be actively developed.

The pastoral areas of Xinjiang, Qinghai and Nei Monggol are important animal husbandry base areas in China. Actively developing water conservation in pastoral areas is very important for promoting stability, high quality and high output in animal husbandry, for continually raising the living standards of minority peoples and for strengthening national unity and consolidating border defense. Now and for a fairly long period in the future, water supplies for animal husbandry and the development of forage land irrigation are the major tasks of water conservation construction in pastoral areas. The actual facilities should focus on the perfection and construction of water supply tubewells. The original basic water supply wells have obvious benefits, and there should be completion and improvements. There should be completion of the potential of facilities and strengthened management of existing projects in forage lands and natural

grasslands irrigation. The long-term tasks of water conservation in pastoral areas are to throw off the situation of "depending on the sky to raise animals" in order to encourage production services. For this reason, we must study and solve water supply problems related to irrigation in the establishment of artificial grasslands, natural grasslands and large forage and feed base areas in pastoral areas. We must construct the appropriate projects and provide other measures to promote modernization in animal husbandry. Priority should be given to providing the human, material and financial resources needed to assist construction.

4. Prevention of desertification and alkalization are important aspects of water conservation development in the region.

The existing deserts in the region are the major conditions which aggravate disasters from hot, dry winds and sandstorms, and they are encroaching upon millions of mu of farmland within and outside the region.

The parent material of the region's soil has a relatively high salt content with a pH value generally above 8. The centers of some basins have become salt lakes, and many irrigation districts must use large amounts of irrigation water to leach out salt and alkali before planting each year. This wastes water and raises the water table. It increases the degree of salinity and alkalinity in nearby soils and creates a vicious cycle. According to incomplete statistics, Kashi Prefecture has 3 million mu of saline-alkaline land, equal to 43 percent of total cultivated land. Each year 400-500 million cubic meters of water are used to leach away the salt. Aksu Prefecture has 2 million mu of saline-alkaline land, equal to 31 percent of the total cultivated land, and uses 320 million cubic meters of water annually for leaching. Grain output has declined by 9 million jin each year as a result of salinization and alkalization damage. There is a universal problem of saline saturation in low-lying plains and grasslands. The partial occurrence of saline saturation is unavoidable, however, given the special conditions of the enclosed terrain of the region. This increases the complexity of preventing salinization and alkalization in the region.

5. Protection of water resources is an important aspect of water conservation development.

Protection of water resources should include: prevention of water pollution; protection of water resource conservation forests and glacial resources; rational utilization of surface water and protection of the rational distribution of natural bodies of water; prevention of a reduction of the surface area and volume of water in rivers and lakes; rational utilization of underground water and prevention of its overexploitation; encouragement of water conservation and control of the amount of water used by urban industrial and mining enterprises which severely pollute water resources and water resource environments; and so on. Originally, Bositeng Lake in Xinjiang was the largest inland freshwater lake in China. Now, due to excessive water use upstream, there is no guaranteed water supply, the lake water level has fallen, and it has already become a semi-saline lake. Qinghai Lake is the largest saltwater lake in China, with a water capacity

of 79 billion cubic meters. The water level has fallen continually, the amount of water has been reduced, water quality has deteriorated and the growth and existence of fish and other aquatic life are threatened. The destruction of forests is even more common and severe. In Alxa League in Nei Monggol, for example, the rate of forest cutting over the past 30 years has been 20 times higher than the rate of reforestation. In mountain forests, much attention has been given to cutting while tree farming has been ignored. There has been a continual shrinkage in the forested area and forest reserves. Forests in the plains areas have suffered even greater damage. For example, the Popular Diversifolia Forest in the Talimu basin has been reduced by more than 3 million mu in the past 20-plus years. Another example is the Siyang River system. According to statistics for 1967 to 1978, 240,000 mu of forests and 500,000 mu of grasslands were cut down. It can be seen from this not only that the question of water resource protection is related to long-term flows and perpetual utilization within water conservation itself but also that protecting the ecological environment in the region is an extremely important task. Therefore, water resource protection should be seen as an important aspect of water conservation development in the region.

To develop water conservation under the above requisite direction for water conservation development, I propose the following measures:

1. Formulate and amplify water conservation laws and regulations.

Water conservation laws and regulations include laws for protection of water resources and water resource environments, regulations for the administration of water resource facilities, plans for water conservation districts and drainage basins, rules and standards for surveying, design and construction and so on. Establishing water conservation laws and regulations requires observing and enforcing laws to guarantee smooth implementation of water conservation development work and achievement of the expected goals.

2. Establish an excellent water conservation administrative structure.

Water conservation administration structures are weak links in the region. Establishing an excellent water conservation management structure from top to bottom is a matter of urgent necessity, especially in establishing and perfecting administrative structures in the large and medium-size drainage basins. The basic unit of the administrative structure should be the drainage basin, which breaks down administrative boundaries and avoids administrative intervention. Their main functions are: to implement a fully coordinated managerial system which practices unified management from top to bottom within the drainage basin, to establish a unified construction and administration system for the engineering projects within the drainage basin and to have administrative rights over the exploitation and utilization of water resources and over protection of water resource environments within the drainage basin.

3. Strengthen scientific research and speed up the establishment of an S&T contingent.

Modernized agriculture is established entirely on a scientific foundation. Water conservation development is an important aspect of agricultural modernization. The main topics of water conservation development in the region which require research include the comprehensive benefits of water conservation projects; the relationship between water conservation and the ecological environment; investigation, research and evaluation of water resources; the status of water conservation development in agricultural modernization; questions of water conservation administration systems; experimental research on advanced technologies in irrigation, construction and administration; water conservation in pastoral areas; improvement of saline-alkaline land and prevention of saline saturation; and others.

4. Strengthen preparatory work for water conservation construction.

Preparatory work for water conservation construction is the foundation which determines water conservation engineering construction. The key to project success is whether this work is done fully. The following items of preparatory work should be completed in the region; investigation and exploration for water resources; drainage basin planning for large and medium-size river basins; additional construction of needed hydrology and flow measurement stations; strengthened monitoring of trends in underground water and establishment of a network of stations for monitoring underground water trends in large and medium-size irrigation districts; strengthened surveying and planning and comprehensive understanding of the basic items of data in water conservation construction; strengthened technical training, advanced training in technical theory, scholarly activities and technical information exchanges; and an early start on surveying, planning and research work in large projects that is needed for a fundamental transformation of the natural and economic situation in the region (such as inter-basin water transfer projects within a province or autonomous region).

5. Water conservation should be closely coordinated with and serve afforestation and grassland planting as well as forest and grassland protection.

The region has only 18,000 square km of forested land, and the forest cover percentage is less than 1 percent. The natural conditions of the region make arid-plains areas the focus of afforestation. A major aspect of water resource protection is protection of forests and grasslands. Forest and grassland protection should give equal consideration to mountainous areas and plains and should pay equal attention to farming and pastoral areas. Indiscriminate reclamation, overgrazing and denudation must be prohibited. The appropriate regulation and storage reservoirs should be constructed in both mountainous area and plains. Well drilling for exploitation of underground water in plains areas should be done in moderation to prevent sharp drops in the water table due to overexploitation, since this can influence the growth of trees and grasses.

6. Favor the long and avoid the short, do what is possible and make appropriate developments in water conservation and hydropower.

Although the region does not have abundant water conservation resources, the present degree of exploitation and utilization is still fairly low. This is especially true in the very inadequate exploitation and utilization rates for water power resources. Future construction should give primacy to irrigation reservoirs for transferring surpluses and replenishing shortages. There should be suitable development of grassland irrigation with controlled development of farmland irrigation. Reservoir construction should be done in accordance with local conditions and should give consideration both to plains and mountainous areas. There should be good management of wave prevention, slope protection and drainage of water from the periphery of already constructed reservoirs. Construction of new reservoirs should give consideration to year-round regulation reservoirs. Consideration should also be given to building perennial regulation reservoirs and to constructing mountain reservoirs with an emphasis on electric power generation. The region has hydropower resource reserves of 10,720 MW which can be developed, but only 284.5 MW are now being exploited. Under the current conditions of a national energy shortage and severe imbalances in the ecological environment of the region, it is especially important to build hydroelectric power stations and to add to energy sources in the region. In addition, more mechanically and electrically powered wells should be drilled for suitable development of well irrigation districts on plains areas. On the one hand, construction of well irrigation districts requires a clear understanding of the amount of underground resources to determine the lowest possible amount available, which generally should not be higher than the precipitation percolation replenishment at 75 percent frequency. This will prevent overexploitation or a drop in the water table, which can cause a whole series of problems related to the deterioration of the ecological environment. On the other hand, we should concentrate on small-scale well irrigation districts. When the conditions permit, there should be suitable construction of some large and medium-size well irrigation districts to make it possible to have intensive administration. It is best to build well irrigation districts in the lower reaches of the inland rivers. This permits scientific utilization of underground water and the water table can be controlled at a proper level. Apart from deriving benefits from irrigation and drainage, this can also reduce evaporation losses from a large amount of phreatic water, which is equivalent to expanding water resources. This provides many benefits from a single project.

7. In the long term, there must be major efforts to construct inter-basin water regulation projects to permit a fundamental resolution of the problem of aridity and water shortages in the region.

Aridity and water shortages are severe in the region. Calculated according to land area, there is an average annual runoff of 42,500 cubic meters per square km, which is equal to 28.4 cubic meters per mu. In some areas like the arid areas of eastern Xinjiang and the Alxa Plateau, the annual runoff per square kilometer is 9.129 and 7,820 cubic meters, respectively,

an average of 6.1 and 5.2 cubic meters per mu. In order to solve completely the problems of aridity in the region, to give full play to the advantages of abundant land resources in the region and to slow down or stop vicious cycles in the ecological environment, we must start with the present and take a long-term perspective to make an arduous effort over a long period to resolve thoroughly the water problem. A thorough resolution of the water problem is only possible through water regulation. Water regulation projects require a great deal of engineering, and it is difficult to achieve in a short time. It should proceed from the easy to the difficult, from the small to the large and from the nearby to the distant. The term "easy, small and nearby" refers to the regulation of surpluses and the replenishment of shortages within the region first. Examples include the projects which draw water from the Datong River and Qinggeng River in the Huhuan Lake District in Qinghai, the project to draw water from the E'erqisi River in Altay Prefecture in Xinjiang, the project to draw water from the Datong River to the Hei River in the Hexi region of Gansu, the project to draw water from the Yellow River to the Alxa League in Hei Monggo and so on. The phrase "easy, small and nearby" refers to serious research on a huge project for a western line to transfer water from south to north, with coordinated arrangements by the state.

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AGRICULTURAL MECHANIZATION IN SICHUAN SPOTLIGHTED

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[Article by Liu Qiuhuang [0491 4428 4635]: "How Does the Western Sichuan Plain Realize Agricultural Mechanization?"]

[Text] Agricultural mechanization is an important link in agricultural modernization. Gradual agricultural mechanization plays an important role in improving the productivity of agricultural labor and per-unit production as well as in promoting the overall development of agriculture in the broad sense (including forestry, husbandry, sideline production and fishery), lowering the cost of products and increasing the income of the peasants. I shall discuss below some views in this regard on the basis of the question of how does the western Sichuan plain realizes agricultural mechanization.

1. State of Development of the Undertakings in Agricultural Mechanization in the Western Sichuan Plain

Since the founding of our state, the development of the undertakings in agricultural mechanization in the western Sichuan plain* has developed from nothing to something and from few to many and has undergone zigzags and repetitions.

In 1954, the state built in Pi County the province's first state-run tractor station; in 1956, the three state-run exemplary tractor stations in Xinfan, Xindu and Guanghan were also established; and by 1960, state-run exemplary tractor stations were built in all counties. All these stations were enterprises under the ownership by the whole people and undertook the production of collective farming through signing contracts with the communes (agricultural cooperatives in the old days--the same below). On the one hand, the establishment of these tractor stations promoted the development of agriculture; on the other hand, because the economy of two different ownership systems and two different working systems placed a constraint upon the overall coordination between mechanical operations and operations by manpower and animal power, this arrangement led to the rise of various contradictions between these tractor stations and the communes from time to time and thereby undercut the full demonstration of the superiority of agricultural mechanization.

*The western Sichuan plain includes the countries and municipalities of Chengdu, Wenjiang, Pixian, Guanxian, Penxian, Shifang, Mianzhu, Anxian, Deyang, Guanghan, Xindu, Jintang, Shuangliu, Congquing, Dayi, Qionglai, Xinjin, Pujiang, Pengshan, Meishan and Jiajiang.

In order that management patterns adapt to the objective needs of the undertakings of agricultural mechanization, the people's communes in the countryside began in 1958 to run their own tractor stations; Toward the end of the 1960's state-run tractor stations were dismantled at various points and the original agricultural machines and tools were released to the management of the communes and production brigades through such methods as selling at a price according to their respective quality and payment by installments. Technical personnel and machines and equipment were for the most part transferred to the county farming machinery plants so as to strengthen their repair and manufacturing capabilities. From then on, tractor stations began to turn from enterprises under the ownership of the whole people into those under collective ownership. During the period when the communes and production brigades managed these farm machine stations, along with the development of the farm machine industry, the number of medium and small tractors gradually increased, and the rice and wheat thrashers and plantprotecting machines and tools all increased substantially. However, for various reasons, including reasons regarding economic conditions in the countryside and the institutions there, and for other reasons, agricultural mechanization undertakings still proved, after all, to be not quite the conscious demand on the part of the vast ranks of the peasants. Hence, the speed of development for agricultural mechanization, generally speaking, was not yet fast enough, and this led to inconspicuous economic results in the use of machines and tools and also played an equally inconspicuous role in the production increase and income increase on the part of the peasants.

Since the 3rd Plenary Session of the 11th Party Central Committee, because of the establishment of many forms of the agricultural production responsibility system (of which the family joint production contractual responsibility system is the principal form, making up 98.8 percent of all production brigades today), it brought about a lease on life in the development of agricultural mechanization. According to known data, the area of crop fields in the western Sichuan plain makes up about 54.85 percent of all arable land,* whereas that in the original Wenjiang District reaches 57.38 percent (the average nationwide level is 42 percent). The portions of mechanically and semimechanically thrashed rice and wheat makes up 80.95 percent of their total production. The acreage subjected to mechanical disease and pest prevention makes up 93.3 percent of the total acreage that should be so treated. Mechanization and semimechanization has already been basically realized in the processing of principal agricultural and sideline products. At the end of 1982, compared to 1978, the total power consumption in agriculture increased by 54.1 percent, and the number of tractors increased by 154.9 percent; those whose number increased the most were hand-operated tractors. Worthy of note is the fact that the speed of increase in the tractors purchased by the peasants themselves turned out to be the highest from the end of 1982 to the first quarter of 1983, the number had already reached 12,187 (of these, the number of those purchased by individuals was 9,258, and the number of those purchased jointly by households was 2,929), making up 45.79 percent of all tractors. The momentum of the peasants' purchases of tractors is still going strong. This shows the groundlessness of the view that in the western Sichuan plain, labor power is plentiful and that especially after the widespread practice of household-based joint production contractual system, there is no need for mechanization.

* Data from Chengdu outskirts, Deyang, Jintang and Pengshan are lacking.

II. Several Problems the Western Sichuan Plain Needs to Solve in the Realization of Its Agricultural Mechanization

1. The Steps and Order for Realizing Agricultural Mechanization

The general law of agricultural mechanization is an advancement from selective mechanization to basic mechanization and ultimately to the realization of overall mechanization. According to the natural conditions and conditions of its social economy, the western Sichuan plain should practice selective mechanization at the present stage; its order of development should be: first, mechanized tilling, plants protection, harvesting, thrashing and drying; second, transportation, drainage, irrigation and the processing of agricultural and sideline products; third, the mechanization of sowing, planting and husbandry, forestry as well as fishery and similar operations. This is because tilling is an undertaking that requires the highest intensity of labor in agriculture; the mechanization of tilling can reduce the peasants' heavy burden of physical labor and assure the timely planting of crops. The index of repeated planting in the western Sichuan plain generally stands at 190-230 percent; as far as the quantity of labor power is concerned, the overall situation is: "when in a leisurely season, there is a surplus, but when in a busy season, there is not enough." According to a survey by the Farm Machinery Bureau of Guanghan County, in the spring sowing period of 1980 the whole county harvested 214,407 mu of wheat and 117,409 mu of rape and planted 368,589 mu of early and intermediate rice; the optimal working time lasted altogether over 30 days. The county actually had 175,280 agricultural laborers, who would be able to perform 5,612,160 work days; the harvesting of wheat and rape and the planting of rice altogether would require 6,541,770 work days. With this supply and this demand thus matched, there is still deficiency of 928,917 work days, that is, of 14.2 percent. In terms of climate in the western Sichuan plain, rain during the summer and autumn lasts about 97 days, making up 61 percent of all rainy days, and the rainfall amounts to about 790 mm, making up 93.08 percent of the yearly total. Such a climate is not beneficial to the harvesting and drying of grains and oil crops. These two situations illustrate that the primary attention paid to the realization of mechanization in tilling, harvesting, thrashing and drying, etc. is an important assurance to the development of production in the western Sichuan plain.

Communications and transportation in the countryside are weak links. The realization of mechanization in transportation aims at a more timely intake from the outside of the means of production and livelihood and of construction materials needed in the countryside and the dispatch elsewhere of agricultural and sideline products, plus the intake of raw materials, supplies and fuels for the countryside enterprises, and the dispatch of their products with a view to promoting agricultural production, urban-rural commodity exchange and the development of the collective economy. In hilly and mountainous areas where communications are difficult, various efforts should be further made for doing a good job in highway construction in order to realize transportation mechanization as soon as possible.

Along with the increase of key households and specialized households in the countryside and the expansion of sideline pursuits, the development of diversification in the countryside and the establishment of commune and production

brigade enterprises and economic combinations, certain small and medium machines and tools required by the development of various commodity production, diversification and collective enterprises--such as the equipment and instruments that meet the need of feed processing, tea processing, mulberry planting and silkworm breeding and the various nurseries, the instruments for conserving energy, etc.--should also be given attention as to their development. The needs in these regards involve many varieties and great quantities; mechanization can do a great deal.

Overwhelming areas of the western Sichuan plain enjoy the convenience of automatic irrigation by the Dujiang Reservoir, but when water is needed most during the wheat growing season, which happens to fall in the dry winter and spring, the water supply still faces the prospect of falling short. Therefore, drawing up water for the purpose of irrigation, especially in the hilly areas, cannot be overlooked. On the other hand, in the summer and autumn, when there is a surplus of rainfall which sometimes even develops into floodings, improving flood-prevention and drainage mechanization would be of even greater significance.

Selective realization of mechanization by no means excludes the possibility that a certain project or projects must be mechanized in location A, whereas what becomes mechanized in location B may be another project or projects. This is because the characteristic of selective mechanization lies precisely in suiting measures to local conditions and proceeding from the peasants' urgent needs, and definitely not in "handling everything the same way."

2. Mutual Combination of Farm Machines and Farming Techniques

The mutual combination of farm machines and farming techniques is the objective demand of improvement in agricultural production. In the past process of agricultural mechanization, the western Sichuan plain never followed its natural and economic conditions in distributing its farm machines and tools; it simply adopted a practice of distributing whatever it had, and this resulted in farm machines and tools not being able to adapt to the needs of local agricultural techniques. In order to change this situation, the farm machine departments should conduct a penetrating investigation and study and thereby manufacture the types of machines or carry out the kind of technical improvement that accord with the current development of agricultural production and the renovation of farming techniques, such as the selective production of some small agricultural machines and tools which are useful where the household is taken as the production unit, which are easy to maintain and repair, which can be used comprehensively in many ways and which conserve fuels.

On the basis of biological science, for the sake of greater production increase, efforts must be made to apply farming techniques rationally. The manufacture and use of farm machines should mainly adapt to the requirements of these farming techniques. In the meantime, farming techniques should also remain stable during a given period and should not be changed too often. Efforts must be made to insure mutual adaptation between farm machines and farming techniques as well as their mutual promotion. In view of the continued advance in wheat-sowing methods, the farm machine departments should seek to find out through experimentation a sowing method which can both lead to high productivity and remain

stable while at the same time proving easy for the peasants to accept and thereby to design and test-manufacture, on the basis of such a method, the wheat-sowing machine that adapts to the requirement of the attendant farming technique. For the transplanting of rice sprouts, there should be a scientific and relatively stable format for the same species in terms of distance between rows and distance between the individual plants in the large field in order to facilitate the realization of rice-sprout planting mechanization. In the case of the mechanization of rice and wheat harvesting, the agricultural production departments should be required to foster high-yield, fine-quality new species which resist falling, whose ear variation is small and whose grains do not fall easily off each ear.

The combination of farm machines with farming techniques is a continually developing process. In that process, both farm machine and farming technique departments must make common efforts. The farm machines production departments must base themselves on new situations and new requirements and, given regional characteristics in test-producing new products, first carry out experiments and then produce them in great batches and pay attention to overcoming past practices of production dislocation, of high price but low quality and of blind production.

There must be carried out an economic appraisal, in the case of this combination of farm machines with farming techniques, from the standpoint of technical adaptability, economic rationality, suitability to local conditions and orientation toward benefit and away from loss and from the standpoint of whether it facilitates the technical functions of the plants in question. This should help select the best farm machines for application.

3. Question of Energy Resources

The insufficiency of energy resources is universal in the countryside, and it constitutes a serious handicap in the construction of the countryside. If this question of energy resources is not solved, it would be impossible to realize agricultural mechanization and modernization.

During the past few years, the use of diesel fuel in the western Sichuan plain has exhibited a continually worsening situation. Take tractors for example: the supply of oil in 1978 was 73 kg per horsepower; in 1979 it decreased to 66 kg; in 1980, to 55.7 kg; and in 1982, further to 30 kg. In 1982, compared to 1978, there was a decrease of 41.1 percent. Such a short supply in diesel fuel is not beneficial to the rational use of the tractors and directly affects the improvement of the utilization rate of our farm machines.

Viewed from the trend of development, farm machines, especially tractors, will continue to increase in number, but it will be difficult for the supply of farm diesel fuel to increase correspondingly. In order to ameliorate gradually the contradictions between the supply and demand of farm diesel fuel, it is necessary to adopt the policy of putting the emphasis on both the exploitation of our energy resources and the conservation of them; today, the emphasis should be put on conservation.

With respect to energy conservation, an urgent present task is to strengthen the maintenance management of our farm machines and tools and to promote proven effective ways of fuel conservation. Except where fuel oil must be used, efforts must be made to make full use of electric and water power. In the case of outdated "oil guzzlers" still in use, no fuel should be supplied to them and a time limit should be set for their replacement. If the concerned production departments, through practice, really prove that certain equipment can conserve energy, they should turn them over to the production plants to improve upon them actively and produce and supply them. In the case of methods for controlling fuel use, there should be put into use such practices as providing supplies according to predistributed fuel vouchers; such vouchers should include indications of tasks in agricultural operations, consumption of fuel, labor income, etc.*

With respect to the exploitation of our energy resources, the main thing is to strengthen the research and experimentation work on substitute fuels. The Guanghan County Farm Machine Research Institute has proposed mixing parts of rapeseed oil with diesel fuel to make a mixed fuel; after experimentation, it proved that the results are good and that the mixture caused no damage to the engines. The areas of Pengxian, Mianzhu and Anxian along the northern frontiers of the plain are rich in coal products; they have proposed to use gas and a fuel. In other cases, substance like chaff oil, oilcake-yielding oil, sunflower seed oil, alcohol from plant fibers and non-grain starch and the like can all be used as substitute fuels.

4. Management System for Farm Machines

Who should own the farm machines and who should manage them and use them are important questions which need study in the formation of farm machine systems.

As has been mentioned above, the question of farm machine and tool ownership in the western Sichuan plain is handled as follows: large farm machines and tools are generally owned by the collectives; medium and small farm machines and tools are mostly owned by the peasant households, but here there is a further difference between family ownership and joint-household ownership. In the case of hand-operated tractors, family ownership dominates absolutely. Such variations have pushed the farm machine enterprises into a new period of development, their management patterns also vary and their economic results are greatly improved.

In management, on the basis of practice during the past 2 years we think there should be the following forms:

A. Establish and Strengthen Farm Machine Service Stations at All Levels.

A county farm machine service station has a dual function: administrative control and business management. Viewed from the present situation, a county station's main tasks are: to do a good job in the county's agricultural mechanization district planning work; on the basis of the requirements of regional adaptation and specialization of agricultural machines, to suggest their type-selection and unit-assignment plan in a manner that suits local conditions; to assign appropriate farm machines and tools according to different crops and natural and economic characteristics; to fix production according to consumption and units sales with

*The method of supplying diesel oil according to predistributed oil vouchers has already been experimented with in the original Wenjiang district.

production; to provide accessories and parts as maintenance and repair materials to agricultural machines and tools and do a good job in maintenance and repair work; and to train farm machine personnel.

A district (or commune) farm machine service station carries out management and service operations with regard to the district's farm machines and tools. Its main tasks are: to carry out due control over farm machines and tools under collective and individual (including joint-household--same below) ownership and management; to exercise control over, and ensure the supply of, oils; to supply accessories and part to farm machines and tools; to maintain and repair farm machines and tools; to provide technical guidance; and to train production security and agricultural technology personnel.

A production brigade (of village) farm machine service station is responsible for organizational and managerial work with respect to farm machines and tools in the confines of the production brigade. In the main it has to do with carrying out the planning of operations with farm machines and tools according to agricultural tasks in the confines of the production brigade, directing the peasant households within the production brigade to sign contracts with tractor operators and also serve as their witness and organizing the farm machines and tools and putting them into operation and solving all the problems stemming therefrom.

B. Promote Individual, Joint-household Management and Household Management under Production Brigade Ownership with Regard to Farm Machines and Tools.

In the case of individually owned, hand-operated tractors, the unity of ownership, management and use has been generally achieved. This form of management is suited to the present level of agricultural production and is beneficial to the development of the capabilities of the farm machines and the development of agricultural production. During a rather long period from now on, individual, joint-household management will be the main form used with respect to small-size farm machines and tools.

With respect to the portion of farm machines and tools which belong to the collectives in the countryside communes and production brigades, there will be no great development within the immediate period ahead. The relatively few farm machines and tools in this part mostly belong to the large and medium types. In the past the prevailing method in the management of operation contracts matching the number of orders had, because they were subjected to too rigid control and rather inadequate management, rendered quite a few restrictions against the enthusiasm of the tractor operators in production. At present, the management of farm machines under the collective ownership of the various localities in the western Sichuan plain is just making a transition from the management form of sharing earnings beyond cost toward the form of household management under production brigade ownership. This form of household management under production brigade ownership is called by the peasants "contracting a unit for the completion of a large-scale task." Its basic approach is merely to ask the peasant household managing and using a tractor to abide by the contract, submit engine depreciation fees and repair and management expenses and let the managing household handle all

the rest by itself. This gives the managing household autonomy, and its enthusiasm in production is thus fully spurred. The result is beneficial to the development of agricultural production.

In handling field machine operations on behalf of the peasants, the farm machine managing household carries out its work by signing contracts with the peasants. Such contracts are signed under the leadership of and is witnessed by the production brigade. The contents of a contract include operational tasks (quantity and quality), time limit for completion, oil consumption, reasonable standard for charges after completion of tasks and form of payment and other related questions.

C. Promote the Individual Responsibility System among Farm Machine Management Personnel.

Strengthening the management of farm machines centered on the individual responsibility system is an effective guarantee of the rational use of farm machines and tools and the promotion of agricultural mechanization. This kind of responsibility system is capable of uniting the economic results of managing these farm machines and tools with the material interests of the concerned personnel

In terms of organization and regulation, the individual responsibility system provides clear prescriptions as to the work station and the limits of responsibility of the personnel related to farm machines, with responsibility falling upon specific individuals. For instance, the special contract work concerning farm machines and tools in the Jinyu District of Guanghan County was done with the responsible person of the district farm machine service station as the contractor; a contractor has definite responsibilities, power and benefits. The economic contractor again metes out subcontracts to the production units subordinate to the station itself, with various economic and technical targets transferred for implementation to the workshops such as those for the installation of machines, for machine repairs, for electric repairs, for forging work and for wood work and to the work groups and individuals. Production personnel practice the approach of complete contract work for a fixed quota; if the work is overfulfilled, they receive a reward; if their completion falls short, they must make up the difference. The account is cleared every month, and all transactions are realized within the month. The economic contractors and management personnel follow a floating wage schedule according to the situation of management.

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INEQUITABLE BURDEN ON GRAIN FARMERS DISCUSSED

Beijing NONGYE JINGJI WENTI (PROBLEMS OF AGRICULTURAL ECONOMICS) in Chinese
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(Article by Ningbo Agriculture Committee Fact-Finding Group, Zhejiang Province:
"Implementing Microeconomic Adjustments, Safeguarding the Interests of
Grain Farmers")

[Text] In the wake of the establishment and continuous perfection of the production responsibility system, in which contractual output and division of labor by specialities are the principal features, the division of labor forces in our city's rural areas is developing day by day, the productive system is gradually becoming more equitable and the situation is getting better and better. However, in the process of developing the contractual output responsibility system many new conditions appeared. Among them, one prominent problem is that, owing to the confusion of grain prices, the price parities among agricultural products are not equitable enough and there are great disparities among the incomes of commune members engaged in agriculture, industry and sidelines. It is felt that raising grain crops is unprofitable. The production mood is unsettled: some people are not content to contract for grain fields, some seek to release their land from contract and some seek to change their contracts to allow the growing of cash crops and specialty products. In order to explore the strengths of using collective economy, to carry out adjustments from the inside, to calm the grain farmers' production mood, to ensure the stable increase of grain production and to promote further the overall development of the rural economy, we must conduct investigative research into the necessity and possibility of microeconomic adjustment, into the path to rational adjustment and also into the problems that require research to resolve.

I. Implementing Microeconomic Adjustments and Safeguarding the Economic Interests of Grain Farmers Are the Objective Requirements of Rural Development

The seven counties and one suburban district of our city all are quite rich in natural and labor resources. After the Party's 3d Plenum each locality conscientiously implemented the policy of "never slackening grain production and energetically developing a diversified economy." Farming, forestry, animal husbandry, side-line production, fisheries and industry each attained a rapid development of production. Step by step, a composite rural economic

structure with grain production, commune and brigade industries and a diversified economy as its three mainstays took shape. In 1982 the total output value for the city's overall rural area economy amounted to 3 billion yuan, an increase of 94 percent over 1978. Of this, the 581 million yuan value of grain output is an increase of 12 percent over 1978, the 1.696 billion yuan output value of commune and brigade industries is an increase of 156 percent over 1978, and the 730 million yuan output value from the diversified economy is an increase of 98 percent over 1978. For the past few years the job responsibility system for production, in which contractual output and division of labor by specialties are the principal features, has been implemented step by step according to the realities of each locality. Of the whole city's rural 2 million-strong male and female labor force, approximately 50 percent are engaged in agriculture. 30 percent are engaged in commune and brigade industries and 20 percent are engaged in the diversified economy or in outside labor and services, the five crafts and so on. More than 163,160 specialized and key households of all kinds have already sprung up, representing 15.5 percent of the total number of rural households in the entire city. The rapid, sudden appearance of a large quantity of specialized and key households in the diversified economy has given rise to a new trend towards concentration of grain lands among farming experts. There are 44,156 rural households that have already supplied more than 5,000 jin of commodity grain. Expanding these figures, 4,994 households have supplied more than 10,000 jin, commodity grain specialized and key households represent 5.7 percent of the entire city's total number of grain-land contracting households and the commodity grain turned over was nearly 300 million jin, or approximately 37 percent of the city's overall commodity grain mission.

However, in the wake of the developing division of labor and division of specialties, the great disparities among the incomes of commune members engaged in agriculture, industry and sidelines, and also between commune members contracting for grain production as opposed to those contracting for cash crops and specialty products, are daily more prominent. Grain farmers commonly report that grain is fundamental, but commune members who till the land are socially unpopular and their incomes are uncertain. "Tilling the land is not as good as factory work and factory work is not as good as going out to learn the five crafts." According to an investigation of Yuyao County's Chengnan Commune Gulutou Production Brigade and Lishan Commune Huchen Temple Production Brigade, as well as Cixi County's Zepu Commune Shuiyunpu Production Brigade, the disparity in annual average incomes between commune laborers of equal rank who are engaged in industry and in agriculture is between 100 and 700 yuan, and the rate of difference ranges from 20 percent to several times as much or more. The major reasons for this great disparity in incomes are as follows:

1. The cost of grain production is high, and efficiency is low. According to an investigation of Yuyao, Zhenhai and Yin Counties, the suburbs and other places, 1,200 to 1,300 jin or so of grain are produced per mu and each mu bears a grain levy of 95 jin, 300 jin for procurement and 200 jin incentive bonus procurement. Under a triple cropping system of wheat and paddy or of oil crops and paddy, gross income in general averages 200 to 230 yuan per mu.

After costs and the various amounts handed over and borne are taken care of, net income is 90 to 120 yuan. Calculating on the basis of each 10th-level laborer contracting 5 mu of land, his annual income is 500 to 600 yuan. For the past year, owing to a rise in the prices of chemical fertilizers, pesticides, diesel oil, small farming tools and so on, the cost per mu has risen in comparison with last year. According to an investigation of the 206 teams and 4,864 contracting households in Luotuo Town, Zhenhai County, in 1983 agricultural expenditures, collective withholdings and tax revenues averaged 100.46 yuan per mu for the commune overall. Compared with 1982 this is an increase of 9.32 yuan per mu--a rise of 10.22 percent. Breaking this down, additions to collective reserves fell 17 percent from the previous year, administrative costs fell 10.1 percent, tax revenues basically remained constant and agricultural expenses reached 67 yuan per mu, a rise of 14 yuan over the previous year. More than 12 yuan of the expenses for chemical fertilizers, pesticides and tractor-plowing were in planned price-hike sections and in negotiated differences in the prices of chemical fertilizers and pesticides. An investigation of Fenghua County showed that this year the portion of list-price hikes for the chemical fertilizers, small farming tools, cement and diesel oil used in agriculture increased expenditures by 989,700 yuan and the portion of planned goods and materials that put into effect market-regulated prices increased expenditures by 1.6 million yuan. The two items taken together amount to 2.58 million yuan. For the 360,000 mu of grain land in the county as a whole, this is an increase in expenditures of 7.19 yuan per mu. If price differences for chemical fertilizers that were arranged for outside of the plan are added in, the average increase in expenditures is more than 10 yuan per mu. In some special economic zones the price parities between grain and other agricultural products are biased downwards. If calculated according to the value of labor, for those engaged in growing oranges and tangerines each man-day is valued at 7 yuan, in tea cultivation it is worth 4.8 yuan, in sugarcane it is worth 4 yuan and in grain it is worth around 2 yuan. Grain farmers report that "grain is the treasure of treasures, but income from its cultivation is as low as it can be."

2. The burden on grain farmers is too heavy and the method of divvying it up is inequitable. After contractual output was instituted, on an overall basis the burden on farmers was adjusted somewhat compared with what it was during the former centralized administration. According to statistics from the six counties of Yinzian, Yuyao, Cixi, Fenghua, Ninghai and Xiangshan, collective withholdings were adjusted from occupying 8.89 percent of gross income in 1979 to occupying 5.15 percent of contractual income in 1982, and the absolute amount fell by 36 percent. However, the burden on farmers is still too heavy. The major problems are that non-production personnel and nonproductive expenses are too numerous, tractor-plowing and mechanized irrigation expenses are too high (in general they are 15 yuan per mu and go as high as 25 yuan), the costs of excessively impractical welfare projects have increased and some communes and brigades following past patterns have not yet adjusted collective withholdings. The majority of local societies divvy up the burden according to the amount of land, so the greater the amount of contracted land the heavier the burden. In suburban Chiangbei Commune's Wantou Production Brigade, for accumulation funds and public welfare funds alone it is stipulated that

28.9 yuan per mu be handed in. In the four production brigades of Cixi County's Dadao region, 29 cadres, an average of 7.2 per production brigade, enjoy fixed allowances. The 20,046 yuan of remuneration plus allowances averages out to 6.07 yuan borne per mu, which represents 22.5 percent of the total per-mu burden. In Luotuo Town, Zhenhai County, of the total of 11,233 workers, 6,001 - 53 percent - contract grain fields. With respect to the land burden, nonproductive expenses for militia training, family planning, locally run education and installation of the water system have reached an average of as much as 15.65 yuan per mu for the town overall. Grain farmers vehemently object to this method of raising reserves and distributing the burden, saying that it is an old method under a new system: "In the factories workers leave it to the production brigade to shoulder the burdens. Commune members on the outside need not bear the burden but those who till the fields must divvy up each and every part of it."

3. Grain farmers have an unstable income. The grain production period is long, nature's restrictions are great and droughts, floods, blights, pests and natural disasters are frequent, so income is unstable. Although those engaged in industrial and sideline occupations also are influenced by market changes, in the final analysis they are a little safer than those engaged in agricultural occupations. It can be seen from an investigation of the circumstances that two kinds of situations occur widely. One kind is where agricultural, industrial and sideline incomes originally are more or less in balance and bonuses for exceeding contracts are also somewhat proportional. However, when increased prices for agricultural production materials, decreased production due to natural disasters and other factors are met with, a wide disparity emerges between the incomes of farming commune members and those in industrial and sideline occupations. The other situation is that industrial and sideline occupation quotas are too low and bonuses are too numerous, so that the disparity is even more prominent. Last year, in a bumper harvest year, the income of each 10th-level laborer engaged in agriculture at Lijia Production Brigade of suburban Zhuangqiao Commune was 1,230 yuan, whereas wages and bonuses for commune members engaged in industry were as high as 3,200 yuan and even female workers also earned 2,600 yuan. This year the 700 mu of grain fields for the entire production brigade are divided and contracted among 90 agricultural workers. The decreased output of early rice due to natural disaster means that projected income for the year will be not quite 1,000 yuan each. However, profits for brigade-run enterprises surpassed contract quotas by a large margin. For the month of August alone a 102,000 yuan profit was achieved. Commune members engaged in agriculture say that they would rather exchange the 1,000 yuan and go to work in a factory. At Xiawanling Village Thread Plant in Giu'ai Town, Yin County, there are 47 workers, each of whom averages 600 yuan in basic wages. After the contract system was put into effect and they got the knack of the change in production, the contract quota was surpassed by a large margin and every worker received a 600 yuan bonus so that wage plus bonus totalled 1,200 yuan. However, 10th-level workers in grain contracting households contracted an average of 6.7 mu of land and had an income of only 800 yuan, a 50 percent difference (numbers as published).

Aside from this, owing to the fact that the ideological styles and service attitudes of some departments are still not compatible with the contractual output system of job responsibility, the contradiction grain farmers have in purchasing and sales difficulties has still not been resolved. This also influences the grain farmers' initiative. They report that "the policy decisions of the Party Central Committee clearly demonstrate that we enter upon the road of diligent labor to gain wealth. But when we call to mind the difficulties of tilling the land, the dearth of material benefits and the lack of peace of mind, we are absolutely exasperated."

II. The Principal Avenue for Implementing Microeconomic Adjustments

Since the 3d Plenum the Party and the state have adopted a series of major policy decisions for the development of agricultural production. These include raising the purchase price of agricultural products and adjusting the base price for grain purchasing and so on, but under present circumstances the state cannot further raise the purchase price of grain. Therefore, within the relatively long term they can only choose to implement microeconomic adjustments within the collectives, using the profits of commune team industries and the incomes of sideline occupations to subsidize agriculture. This is one major policy that they must persist in for the long term. Looking realistically at the establishment of the contractual output system and at the overall implementation of agricultural production policies, our city's rural areas have changed the unitary administration situation of the past. Agriculture, industry and sidelines have developed in concert and the vast majority of local communes and production brigades have already taken shape as economic entities. Objectively, there has been the possibility of internal adjustment. For the city overall, on the whole there are two kinds of circumstances. One kind is in the suburban districts of cities and towns and in the grain and cotton plains regions where, in general, industrial and sideline occupations are quite numerous. There, more than 50 percent of the peasants engage in industrial and sideline production and collective resources are relatively abundant. Thus, the conditions for industrial subsidization of agriculture are quite good. For example, the five communes and 100,000 mu of land in the Jiangshan district of Yin County bear responsibility for more than 64 million jin of the state's commodity grain. Of the 23,363 peasant households throughout the region, 13,175 households, or 56 percent, contract grain fields. In 1982 the total output value for commune and brigade enterprises was 72,748,700 yuan and net profits after taxes were 10,589,000 yuan. Of this, 835,400 yuan were disbursed downward and distributed, 817,900 yuan were invested in capital construction on farmland, 823,700 yuan were used for public welfare projects and social responsibilities and 215,400 yuan went to purchase farm implements. The four items added together total 2,692,400 yuan, or 25.4 percent of total profits. According to an investigation of 87 production brigades, some 80 percent or so have business profits that could subsidize agriculture. District commune secretaries unanimously feel that, after the subsidization of agriculture and division of contracts among households last year during the period of centralized administration, the subsidization of grain farming, particularly the support of commodity grain specialized and priority households, is even more important. They believe

we need only to reform the distribution and subsidization methods of the past, with district and communes setting the example in cutting non-production personnel and curtailing nonproductive expenses, and the implementation of microeconomic adjustments within the collectives will be possible. According to the analysis of an investigation of Yuyao County's 795 production brigades, 119 of them, or 15 percent, are economically strong and have already aided and subsidized agriculture. There are 477 of them, or 60 percent, that have aided or subsidized agriculture to different extents. Another kind of district is that which, although lacking a foundation in commune and brigade enterprises, does have commune and brigades with quite well-developed sideline and specialty production. These districts adapt subsidies for grain farming from funds handed in by specialists contracting for sideline occupations and for economic specialty products. They have also achieved good results. For example, Shadi Production Brigade of Zixi Commune in Ninghai County has 22 mu under production in oranges and tangerines, 12 mu of day lilies and more than 230 mu of paddy. Before 1981, owing to the prominence of contradictions among the various occupations, neither grain nor special economic production could move forward. In 1982 labor based on specialty contracting was implemented. The oranges and tangerines team of the production brigade handed up 14,000 yuan, of which 4,000 yuan were accumulated and 11,000 yuan were used to subsidize agriculture (numbers as published) at the rate of 42 yuan per mu. The oranges and tangerines team considered agriculture to be the standard for determining the scale of rewards, and it brought the incomes of those engaged in agriculture and those engaged in sidelines roughly into balance. For the past two years those who till the fields have felt relieved and those who contract for oranges and tangerines have felt at ease. In 1982 grain production surpassed historic levels and the yield of oranges and tangerines has risen year by year. This year they also have 30 mu of young tangerines that have been painstakingly cultivated and are finally beginning to produce.

Experience proves that when the economic interests of grain farmers are ensured their initiative truly flourishes. There is still an enormous latent capacity for raising the level of grain production and increasing economic benefits. According to an investigation of the 26 grain-growing specialized households in Yuyao County that have put more than 10,000 jin or commodity grain up for sale, altogether 375 mu of grain fields were contracted, a household average of 14.4 mu. In 1982 grain production averaged 1,597 jin per mu, 147 jin higher than that of like grain districts. Sales average 974 jin per mu, which is a 63.7 percent ration of marketable products and is 2.1 times higher than that of like grain districts. Expenses were 45 yuan per mu, 9 percent lower than those of like grain districts, and net income was 190 yuan per mu, 55 percent higher than that of like grain districts. The county commission gained enlightenment from the investigation and raised grain-growing specialized households to an important position. The county adopted eight preferential measures for them: (1) Commune and brigade enterprise profits were disbursed downward--70 percent were distributed according to the commodity grain supply figures. (2) The sharing of social burdens according to mu of land was changed so that they are borne by laborers of all occupations. (3) The system of reserving accumulation funds according to contract income was changed to one of contracting for assigned quotas to be handed over according to previous fixed production quotas. The differential incomes after

land processing and administration were returned to contract-household ownership. (4) Production teams were required to extend base advances for production expenses. (5) The number of tasks involved in negotiating grain prices and in pricing rapeseed according to state monopoly grain purchasing, were proportionally distributed among households. (6) A portion of the planned chemical fertilizer was earmarked for distribution according to commodity grain figures. (7) Priority was given to supplies of agricultural goods and materials. (8) Specialized and socialist service organizations gave priority to serving specialized households. Owing to the political concern for grain-growing specialized households and to preferences given them in economic matters and in goods and materials, they felt reassured, went wholeheartedly out upon the land to do a good job of production, raised results in a thousand and one ways and became model households in rural implementation of scientific farming.

Implementing microeconomic adjustments within the collectives and supporting farmers' grain production development are in the process of raising the attention paid to leadership at all levels. Moreover, a great deal of good experience is being stumbled upon in the practice. Many vigorous measures have been adopted, of which the following are the principal ones:

1. Return of District, Commune and Brigade Industrial and Sideline Profits.

In the past, under centralized administration, returned profits were distributed according to laborers' workpoints. After administration was divided among households, everything was distributed according to land. Now this has been changed in the following manner: (1) Distribution is now proportional based on commodity grain and contracted land, such that subsidization of commodity grain prices is given priority. In areas where contracting is based on labor, the grain of non-contracting households is calculated together with commodity grain. (2) The price differences in chemical fertilizers are subsidized. (3) The expenses of key links in the production chain, such as pig raising, increased use of organic fertilizers and nylon [mulch] sheeting, popularization of improved varieties and so on, are subsidized. Jiangshan District of Yin County disburses agricultural subsidization funds downward from the after-tax profits of enterprises at the three levels--district, township and village--respectively. The stress is placed on subsidizing grain prices and production costs. One means of doing so is as follows: 15 jin of the standard nitrogenous fertilizer is supplied per 100 jin of commodity grain (including the grain ration of non-contracting households) turned in. Outside of the planned supply, the price difference for that which is provided by district and township organizations is given as a subsidy. A second way is to subsidize the price of grain by 1 to 4 yuan per 100 jin. A third way is, taking the village as the unit, to organize tractor-plowing and mechanized irrigation organizations, strengthen economic accounting, unify standards for fee collection, suitably subsidize remuneration for the personnel of specialized organizations and have contracting households appraise the quality of service. A fourth means is to regulate the amount of withholding for accumulation funds and share out the burden of public welfare operating costs by disbursing village enterprise profits downward. A fifth means is to contract land for a fixed five years. If the contractee desires to transfer possession,

then all his preferential treatment is enjoyed by the joint contracting households. After these policies were implemented there were great repercussions on grain-contracting households. It was widely reported that economic benefits proliferated and people's minds were set at ease. The previous anxieties of industrial and sideline personnel worried about repeatedly subdividing the grain field have also been eliminated step by step. Fengting Production Brigade, of Changfeng Commune in Yuyao, has established a system of agricultural subsidization funding: in lean years they subsidize more and in bumper crop years they subsidize less. This year they have disbursed 27,000 yuan of enterprise profits downward. On the basis of contract area this is a subsidization of 12 yuan per mu, 2 yuan per 100 jin of commodity grain to make up price differences, 50 yuan per household as a bonus to priority households that supply more than 3,000 jin of commodity grain, and a 100 yuan bonus to those that supply more than 8,000 jin. Some priority and specialized commodity grain households have said jubilantly that "this way, every trade and profession is concerned for us and we till the fields even more confidently."

2. Provision of Base Allowances for Production Expenses, Lengthening of the Pay-Back Period for the Production Materials Received as Monetary Equivalents.

Rural production brigades for the entire city have collectively accumulated a total of 490 million yuan, of which there are approximately 200 million yuan of usable, ready money accumulated. In order to increase the use of and benefits of collective funds and of medium and small farming implements and to resolve the problems contracting households have with production funds, based on a general cleanup, a portion of localities have already adopted two steps: (1) Measures to disburse base allowances for production expenses are worked out to suit brigade conditions. The fund belongs to the collective and there is a division between household supervision of its application and collective supervision of management funding. It is first of all used in rerouting roads for farm machinery, irrigation and drainage channels, and electric wiring, and in suiting the needs of household contract management. (2) The monetary equivalents for agricultural boats, draft oxen, scattered warehouses and other medium and small models of farm implements that are suitable for contract household management and use are turned over to the households. The money is paid back in installments or base advances are made of monetary-equivalent property funds. According to statistics from 24,639 production brigades, there are now on hand 133.12 million yuan worth of accumulated usable funds. The 15,629 production brigades that have already disbursed downward base allowances on production expenses represent 63.4 percent of the total. Altogether 36,557,600 yuan has been disbursed downward, an average of 24 yuan per mu. Of fixed property originally valued at 157.54 million yuan, 30.4 percent is in small farming implements that have already been sent as monetary equivalents for household application. Of this, for the 7,618 production brigades that have made base advances of monetary-equivalent property funds totalling 19,618,000 yuan, the average base advance is 23 yuan per mu. In the first half of this year, in accordance with the requests of grain-contracting households, at Kaiyuan Commune in Yuyao County the accumulated additions of profits that production brigades disbursed downward from commune and production brigade enterprises totalled 200,000 yuan, over and above the 25 yuan per mu of production expense base advances that

were extended. This took care of five big problems for the contracting households. First of all, the drainage and irrigation network outlets were transformed and 19 new piers for equipment and 4 motorized waterwheels were set up, achieving better informed drainage and irrigation. Secondly, 400 meters of high-tension wires and 160 meters of low-tension wires were erected to bring power sources closer to the fields piece by piece. Thirdly, 150 electric motors and 144 threshers were newly added for the combined households to keep and use by turns. Fourthly, 15 kilometers of tractor-usable roads were repaired and brigades established specialized tractor-plowing teams, strict accounting, reasonable fees and suitable subsidizations. Fifthly, 22 farm chemical mixing stations were set up. The anxieties of contracting households over difficulties in tilling the fields were resolved, initiative among contracting households for the development of grain production was encouraged and the level of political consciousness for handing over collective withholdings was heightened.

3. Reform of the Methods of Collective Withholding and Sharing, Lightening of the Burden on Contracting Households.

After the division into contracting households, in order to expand reproduction, the fund that commune members voluntarily raised to purchase medium and small farming implements generally cost around 30 or 40 yuan per mu. In line with the special characteristics of integrating contractual output's two levels--management and centralized distribution--adding this part of the fund is essentially the same as being a part of the accumulation fund. Therefore, the total amount of collective withholding should be suitably adjusted and decreased in line with needs and capabilities. Many localities in Cixi, Yuyao and Zhenhai Counties have already adopted the withholding method of "planned withholding, balanced revenues and expenditures, a little accumulated surplus and equitable burdens." In regards to farmland construction which must be undertaken, the production brigades or the brigades, following a unified plan, incorporate into a yearly plan (1) the accumulation funds necessary for investment for agricultural machinery and production development projects which must be under unified management, (2) the public welfare funds to be shouldered by contract households, and (3) funds from other sectors. The plans are submitted in contract form to the state. Industrial and sideline occupations are relatively scarce at Daotongdi Production Brigade of Fuhai Commune in Cixi County, and in 1980 nonproductive expenses alone were 23 yuan per mu. In accordance with the vigorous demands of contracting households, at the beginning of 1982 eighteen nonproductive expenses and amounts for accumulation fund withholdings were set out from the plan. They were submitted to commune members for deliberation, were investigated at mid-year, the accounts were closed at the end of the year and the results were excellent. Real expenses for the brigade overall were 5,660 yuan, an average of 10 yuan per mu, and the surplus as a result of economizing was 1,330 yuan. Part of this was a one-third reduction in wages lost due to cadre work delays. Outside of accumulation funds, as of the beginning of 1983 estimated nonproductive expenses could end up being 25 percent lower than planned figures. This has educated cadres to make meticulous calculations, to run the people's commune industriously and thriftily and to put an end to indiscriminate expenses and spending. It has also caused funds that ought to be withheld, that should be

borne, to be dropped from practice. With respect to the planned expenses for childbirth, culture and education, sanitation, aid to disabled servicemen and martyrs' families, households enjoying the five guarantees (food, clothing, medical care, housing and burial expenses for elderly, childless people), care of and militia training for poor households and public order mediation, most localities have changed over from sharing out the burden according to land to sharing it out jointly among commune members of all occupations. They have lightened the burden on commune members who contract farm land.

4. Working Out of Measures to Suit Brigade Needs, Establishment of a System for Subsidizing Agriculture and for Funding Rewards to Enterprise Staff and Workers.

Owing to the fact that both agriculture and brigade-run enterprises have a certain instability, it is difficult to balance them. Many brigade-run enterprises are well-gearred to the needs of the job and have a lot of vocational work. In one year their output value and profits might rise by several times or even several tens of times and rewards for exceeding the contract would be hard to keep under control. If the contract was cancelled, then the initiative of workers and staff would be dampened. If the terms of the contract were honored, then the differences between those engaged in industry and those engaged in agriculture would be increased. However, if the choice was made to maintain industry and subsidize agriculture, then it would be feared that profits from commune and brigade enterprises would one day fall and that the various occupations would be difficult to equalize. Consequently, as a result of deliberations by those engaged in industry and those engaged in agriculture, two funding systems have been established. This year the village-run enterprises of Shigan village in Shigan Township, Yin County, may achieve a profit of 380,000 yuan after taxes, surpassing historical levels. After consideration by the village Party branch it was decided to disburse 15 percent of enterprise profits downward to subsidize agriculture. The 10 grades of laborers engaged in agriculture would contract land as previously and after 1,000-odd yuan had been supplied the surplus part would be laid aside in a fund. A portion of the bonus money for commune members engaged in enterprises would also be withdrawn and laid aside in a special fund. Each year some would be laid aside and the amount, including both principal and interest, would increase year by year. The bumper harvests would make up for crop failures and protect the regular incomes of commune members engaged in industry or in agriculture from the influences of wide fluctuations in enterprise fortunes.

5. Aside from the measures listed above for aiding grain contracting households, in line with their actual situations, various localities have also adopted a series of methods to balance incomes of commune members in the different occupations. (1) Personnel are balanced. In order to adjust the contradiction between farmers and workers, after the implementation of labor-based contracting, priority was given to arranging for the auxiliary labor of grain contracting households to start work in the factories. (2) "Agricultural subsidization funds" are handed over to the higher authorities by industrial and sideline personnel. (3) Base wages and bonuses between commune members engaged in industry and in agriculture are generally balanced.

Subsidization quotas for commune members engaged in agriculture are fixed by means of the base wages and bonuses of commune members engaged in industry. Fixing this at the beginning of the year sets commune members engaged in agriculture at ease and arouses the initiative of commodity-grain-growing households.

Microeconomic adjustment sets the minds of commune members in various occupations at ease and gives an entirely new look to production by arousing initiative, making production brigades more suitable and inspiring confidence among grain farmers. Giaoxi Production Brigade of Yuyao County, located at the edge of town, has well-developed industrial and sideline occupations. Those engaged in industry or sidelines occupy 51 percent of the 574-strong male and female labor force. This year there were 10 farming households that desired to reduce their contracted fields, and five households contracting ration-grain fields that wanted to change their contracts. However, owing to the high cost, low income and difficulties in cultivation associated with grain farming, nobody was willing to take over the contracts. In line with the spirit of the Party Central Committee's circular, the production brigade's Party branch analyzed that production brigade's favorable conditions for cooperative economic development and came to the conclusion that industrial and sideline occupations and mountain and forest production will only be able to develop more rapidly when grain has been stabilized. Consequently, after they adopted the aforementioned relevant measures in accordance with their own financial resources, grain farmers benefited, initiative was greatly heightened, contract fields were stabilized, people took over contracts for those who really had to change their contracts, those who tend the mountain forest lands were reassured and the minds of those in enterprise or away from home who handle specialized production were set at ease. For all trades new developmental momentum emerged in production.

III. A Few Questions that Need to Be Studied and Resolved

1. We must further a common understanding and raise the political consciousness of cadres at all levels to aid grain farming. Following from the implementation of microeconomic adjustment within the cooperatives, the policies for protecting the economic interests of grain farmers are increasingly being accepted by cadres and commune members engaged in the different occupations. However, it is true that there is a portion of cadres who have an insufficient understanding of the significance of this policy decision and who have a low political consciousness. Some believe that the value of achievements by commune members in industrial and sideline occupations is greater and their contributions more numerous, so that their wages and bonuses ought to be higher. They believe that a balancing of remuneration might influence the initiative of commune members in industrial and sideline occupations. Some believe that families have contracted fairly and there has been no need to aid and subsidize agriculture. They feel that previous steps taken to subsidize agriculture should be revoked or reduced. Further, there are some who are unconcerned about strengthening human and financial resources and who believe that not only should enterprise profits and the income that sideline occupations hand over to the higher authorities not be used to subsidize agriculture, but also that the apportionment among levels and the load

division according to land has influenced the initiative of grain farmers. Therefore, we must augment the ideological education of cadres and commune members in the different occupations so that they get a clear understanding of the developing trend of the contractual output system and of the prospects for rural economic development. Recognizing, by means of force within the collectives, the major significance of supporting and protecting the economic interests of grain farmers in all aspects, is an important policy with a rich content that we need to persist in for the long term. It is absolutely not an expedient measure to subsidize lean years and be relaxed in bountiful years. Enabling grain farmers, through our practical policies, to dismiss their apprehensions, heighten their feelings of honor, establish an ideology of long-term construction, add boldly to the essential means of production, study science and technology and expend more effort on land management thereby enables us to maintain equitable proportions, mutual progress and speedy development in grain production and economic development.

2. We should arrange the financial and material resources of rural communes and brigades according to the guiding principle that "first we must eat and second we must build." We must resolutely control nonproductive construction and make up our minds thoroughly to straighten out inequitable peasant burdens. At present, a portion of the commune and brigade cadres cannot see the new problems and new tasks that face them in the development of the contractual output system for agriculture. They are unconcerned about human and financial resources and they blindly expand nonproductive capital construction. In building movie houses, theaters and office buildings they go in for ostentation and extravagance and compete with each other in luxuriance. Their standards get higher as time goes on and they invest several hundreds of thousands of yuan or up to a million yuan. The management of welfare projects has surpassed economic capabilities. In these localities the communes and brigades are economically unable to make ends meet. Some of them are even up to their ears in debt so that support for grain-contracting households becomes mere hollow rhetoric. We must resolutely correct this state of affairs. We should see that the agricultural base is still very fragile and that the real momentum has only just begun. From start to finish we must persist in the fine style of managing all enterprises diligently and thriftily. We should correctly manage the relationship between accumulation and consumption and use our principal financial and material resources first of all in productive construction and in aiding agricultural enterprises, particularly grain-contracting households. We must also utilize them for investment in developmental production projects, for prenatal and postpartum service facilities and for investment in rural education and essential capital construction on farmland.

3. Implementing microeconomic adjustments within the collectives and using commune and brigade enterprise profits to aid grain growing is restricted macroeconomically. Currently, in some priority grain regions where commune and brigade enterprises are quite developed, one major item that everyone is talking about is the question of whether or not commune and brigade enterprises will be able to continue on. Speaking from a microeconomic viewpoint they say that "to go up would be terrific, to come down would be disastrous." They are afraid that next year the "money market" will be

squeezed tight and they are afraid of changes in the tax system. There is a widespread fear that after proportional taxation is changed to an eight-level progressive tax on quota excesses, funds to aid and subsidize agriculture will be reduced. Therefore, there is a demand for the departments concerned to investigate and study the options and deal with each one on its merits. One of them is for the existing income tax system to remain stable for a few more years. A second one is to appropriately stabilize production brigade-level enterprises. A third one is to continue using the tax system currently in effect for a portion of agricultural commodity processing, agricultural services and large industrial processing enterprises.

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